SONIC SOLUTIONS

SONIC STATION™

SonicStation

User Manual

Software Version 2.0

SONIC SOLUTIONS

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About this Manual

The SonicStation Owner's Manual is organized as combination of tutorial and reference materials. It is designed to get the SonicStation user up, running, and doing useful work as quickly as possible, while providing all of the detailed information needed as one delves into the full capabilities of the system.

Chapter 1 explains how to set up the SonicStation hardware and software, and verify that all functions of the system are operating properly. When the setup and checkout procedures have been completed, the SonicStation is ready for use.

Chapters 2 and **3** provide a tutorial in basic SonicStation operations. Chapter 2 covers the basics of recording and playback. Chapter 3 takes the user through a complete editing exercise. Having completed these tutorials, the user will have acquired all of the information needed to use the SonicStation for practical audio editing.

The remainder of the manual provides in-depth reference information on the SonicStation's many features and functions. In normal operation, much of the information in these chapters will be apparent from the SonicStation's menu commands and dialogs. Whenever a question arises, the user can turn to the appropriate chapter for an explicit description of each command's function.

Likewise, if information is needed on a specific operation, the user can review the description in the reference section before use. Browsing through the reference material may also provide ideas of new ways to use the SonicStation's advanced capabilities.

Chapter 4 gives details on the SonicStation Mixing Desk, a 4-channel real-time digital mixer with eight assignable digital equalizers built in.

Chapters 5 and **6** cover recording and playback on the SonicStation, including the operations that combine recording and playing audio; i.e. punch-in, capturing edited audio into a new Sound File, and editing and playing audio while recording in the "background."

Chapters 7 through **11** provide extensive information on the SonicStation editing features, starting with a detailed description of the waveform editing display.

After covering the commands for placement and movement of the various editing markers used in the SonicStation in **Chapter 8**, the next two chapters (**9** and **10**) describe the operations of editing using the Edit menu commands and the specific techniques of editing using audio Segments and the SonicStation's Text display.

Chapter 12 explains how to use SMPTE and EBU time code to synchronize the SonicStation with other equipment such as video decks and MIDI sequencers, as well as how to use the SonicStation to generate time code.

Chapter 13 covers the process of Archiving a complete Project (the collection of Sound Files and Edit Lists involved in a particular audio task) onto DAT or other digital tape. The full Project can be restored onto the SonicStation's Sound Disks at a later time, allowing the user to proceed with work on the same project without having to recreate previous work.

Conventions

Most of the terms specific to the SonicStation, such as Sound File, Edit List, Sound Disk, etc., are printed with initial capital letters. Items that are specifically named onscreen, including the names of menus, commands, dialogs, and specific buttons and fields are printed in a bold font (Chicago) that resembles the way these items appear onscreen. For example, "The **File** menu contains the commands **Insert** and **Insert & Ripple**."

The full names of keys on the Macintosh keyboard are indicated with initial caps. Abbreviated key names ("opt" for Option, "ctrl" for Control) are not capitalized.

This manual consists of both *descriptive* (What is it?) and *prescriptive* (How do I do it?) information. When a specific procedure is described, a special layout is used to help the user distinguish such material from the descriptive material surrounding it. This layout looks like:

To Do This....

- **Do That....**
- **....And That**

Nine Things to Remember When Using the SonicStation

The SonicStation is not necessarily difficult to use, but there are a few key concepts and important tricks that the user needs to be aware of in order to avoid the most common pitfalls. This preface has been prepared to help the beginning user especially, but even experienced users may wish to review this information from time to time.

1. For editing, sound must first be recorded as a *Sound File* on the SonicStation's *Sound Disks*. Once recorded, the Sound File must be *opened* into a new or existing *Edit List*. See Chapters 2 and 5.

2, The SonicStation requires a master *sample clock* in order to play audio. This clock is normally provided by the digital audio output of the *load* device, whether digital audio tape (DAT or other), Compact Disc player, or analog-to-digital converter. If the load device is disconnected or turned off, the SonicStation can clock from it's internal crystal oscillators, but it must be manually switched to internal clock by turning *off* the digital audio inputs in the **Audio I/O Preferences** dialog. (See Chapter 1)

3. Sound Files are stored on the SonicStation Sound Disk, which is connected to the SCSI port on the SonicStation SSP-3 card. The SonicStation maintains a separate file system specifically for Sound Files. On the Macintosh "Desktop," Sound Files are represented by *headers*, which are placed inside folders within the SND folder.

4. When the SonicStation boots up, the **Open...** commands will direct the user at first to the folder in which the application is stored rather than to the SND folder in which the Sound File actually are found. The user must navigate to the SND folder the first time they open a file in a session. After that, the file select dialogs will "point" to the previously used folder.

5. The file system on the Sound Disk must the *remade* periodically. On occasion, the disk itself should be *reformatted*. Both of these operations may be performed from the **Sound Disk Manager.** After remaking or reformatting, the Sound File headers in the SND folder should be disposed of. Otherwise, the system will think that there are Sound Files present that have been deleted. (See Chapter 5.)

6. The SND folder must be placed at the uppermost level of the Macintosh *Boot Volume (Disk)* . It cannot be placed inside of another folder. If there is more than one hard disk in use on the Macintosh itself, the SND folder may not be placed on the second disk. Considerable confusion can result from having more than one SND folder in the system.

7. For recording, make sure that the SonicStation's digital audio inputs are turned on.

8. Most editing and play operations work *only* on a *selected* display panel. Most editing operations automatically refer to all panels in the same Edit Group or Sync Group as the selected panel.

9. Key equivalents are much faster to use than menu commands, and greatly speed editing operations. Some key equivalents are built into the system, but most are provided by using *QuicKeys* from CE Software. SonicStation users are *strongly urged* to get this program and install it as described in Chapter 1.

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Introduction

The SonicStation is a complete digital audio workstation that consists of hardware and software components installed in a Macintosh II or Macintosh Quadra computer.

To install the SonicStation, the Sonic Signal Processor (SSP-3) board must be mounted in the computer and connected to one or more external Sound Disks. The installed SSP-3 must be connected to suitable external audio equipment.

The SonicStation software must be installed on the Macintosh's internal or external hard disk.

I. Installation

The SonicStation consists of both hardware and software components. The main processing board, the SSP-3, is installed in the card cage of a Macintosh II or Macintosh Quadra computer. Its rear-panel connectors are connected to external digital audio hardware, optionally including one or more SonicSolutions interface boxes. The SonicStation software is delivered on five floppy diskettes. This software must be installed on the Macintosh internal or external hard disk in order to run.

Hardware Overview

The SonicStation is delivered with all necessary connectors and cables, ready to connect with digital audio equipment using optical interfacing. Sonic Solutions manufactures a series of interface boxes to connect with other audio equipment.

Main Components

- One **SSP-3** card—A sophisticated circuit board needed to run the SonicStation software.
- One **Direct SCSI cable**— A thick, round cable about 3 feet in length. One end carries a 50-pin header to mate to the corresponding connector on the SSP-3 circuit board. The other end has a standard "Cinch-style" SCSI connector to connect to a Sonic Solutions Sound Disk.
- One **Time Code Connector** cable— A gray "Y" cable with an 8-pin mini-DIN plug on one end, and male and female XLR connectors on the other two ends.
- Two thin **fiber-optic** cables for digital audio input and output.
- One **in-line SCSI terminator**— A plastic block about 7 cm (3 inches) long with connectors on each end that match those on the Direct SCSI cable.
- A set of **floppy disks** containing the SonicStation software.

Take a moment to identify each component before beginning the installation procedure.

System Requirements

The SonicStation requires a Macintosh II or Macintosh Quadra computer, as well as one or more Sonic Solutions Sound Disks. The Sound Disks are high-capacity SCSI hard disk drives used to store digital audio. These drives are external to the Macintosh and are connected to the SCSI port on the SSP-3 card rather than to the Macintosh SCSI connector. The SonicStation application is typically stored on the Macintosh's internal or external hard disk. The Edit List information and pointers to the Sound Files are stored on whichever disk is designated as the Macintosh "boot" volume.

The Macintosh II or Macintosh Quadra Computer —The Macintosh II or Quadra from Apple Computer serves as the host for the SonicStation. The Macintosh must include:

- A hard disk drive (not the same as the Sound Disk) with at least 5 MB of free space for the system software.
- *At least* 8 megabytes of RAM memory.
- Apple extended keyboard or equivalent.
- A mouse, trackball, or other pointing device.
- A Macintosh-compatible color video monitor.

Some models of Macintosh require a separate video card.

The Macintosh system software must be Version 6.0.5 or later; the SonicStation supports Macintosh System 7, except for virtual memory.

Apple normally ships the Macintosh with 1, 2, 4, 5, or 8 megabytes (MB) of internal random access memory (RAM). The *minimum* configuration for use with the SonicStation is 8 megabytes. To find out how much memory is active on the Macintosh, select **About the Finder** (or **About this Macintosh** in System 7.0) under the menu. To add additional Macintosh memory, refer to the Macintosh documentation or consult your computer dealer.

Sound Disks —The SonicStation requires one or more special hard disk drives for storage and manipulation of digital audio. Sonic Solutions supplies these disks in four sizes:

SS-406	0.4 gigabytes
SS-400	0.8 GB
SS-405	1.2 GB
SS-407	1.6 GB

IMPORTANT! DO NOT attempt to use hard disk drives other than those supplied by Sonic Solutions. No support will be given for problems arising from use of disks acquired from other sources.

Sonic Solutions Sound Disks are packaged in either single or double disk cabinets. Special SCSI cables link the Sound Disks to the SSP-3 card as described in the pages that follow.Sound Disks

Installing the SonicStation Hardware

Setting Up the Macintosh II or Quadra

We recommend that you configure the Macintosh, following the instructions supplied by Apple Computer, and confirm that it works properly *before* installing the SSP-3 card or Sound Disks.

A Note about Sound Isolation

The Macintosh hard disk and the Sonic Solutions Sound Disk drives are mechanical devices that generate significant amounts of noise. For this reason, many users prefer to isolate the Macintosh main unit and Sound Disks from the keyboard and monitor. Extension cables for video and keyboard are available from Sonic Solutions (part numbers SS-643 and SS-644, respectively) for that purpose.

Installing the SSP-3

The SSP-3 card is the signal processing center of the SonicStation. The bottom of the card has a connector that plugs into a NuBus expansion slot on the main board of a Macintosh II or Quadra-series computer. On the rear of the card are two connectors for optical digital audio input and output and an 8-pin mini-DIN connector for time code. Refer to Fig. 1-1 below.

The SSP-3 card receives and sends AES-format digital audio in optical form using fiber-optic connectors. The cables included with the system can be used to connect the SonicStation directly to digital audio equipment that uses standard optical connections. The optional **SS-610 Analog Converter** or **SS-611 Optical Converter** are used to interface with analog audio equipment or with digital audio using coaxial (electrical) connections.

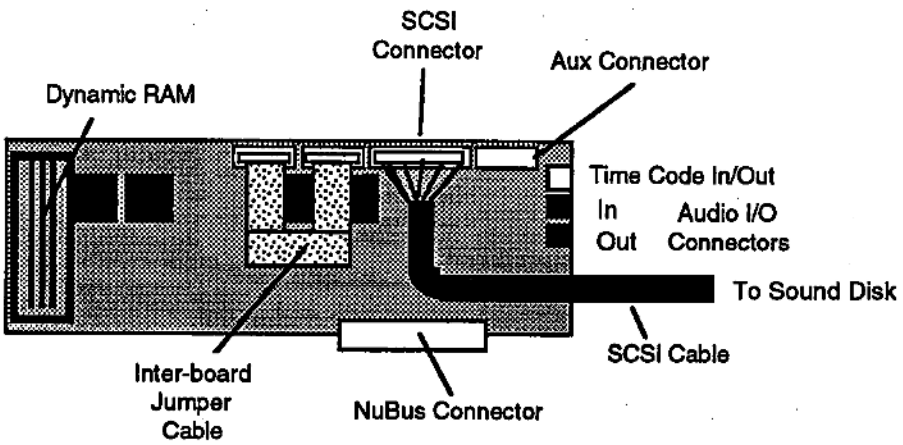

FIG. 1-1: SSP-3 Configuration

To install the SSP-3:

- **Turn off power to the computer and remove anything on top of the computer's cabinet, such as the display monitor.**

> **IMPORTANT!** Power to the computer must be off when you plug in the SSP -3 card. Both the Macintosh main circuit board and the SSP-3 card may be damaged if they are connected while Macintosh power is on.

To avoid damage from static discharge, keep the computer's power cord plugged into an outlet.

- **Remove the cover of the Macintosh II or Quadra to expose the Nubus expansion slots. Refer to the documentation for information, as various models of Macintosh differ in the way the chassis opens.**

> **IMPORTANT!** Before handling the SSP-3 or other static-sensitive components, be sure to ground yourself to discharge static charges by touching the metal case of the Macintosh power supply. Use of antistatic wrist straps is recommended if they are available.

Note: The Macintosh IIsi requires a NuBus adapter (with floating-point coprocessor) for use in a SonicStation, which somewhat complicates the installation procedure. Refer to Apple's documentation for additional instructions.

For the IIsi, the SSP-3 is installed into the NuBus adapter before the adapter goes into the computer, and the SCSI cable installation must be modified. Also take extra care to discharge static before handling the SSP-3 and the NuBus adapter.

- **Select a NuBus card slot for the SSP-3 and remove that slot's plastic peripheral port cover plate and metal bracket from the back of the Macintosh. Any available card slot may be used for the SSP-3 card.**

- **Before installing the card in the Macintosh, the end of the SCSI cable that is joined to the SSP-3 card must be threaded in through the opening in the Macintosh's rear panel. This is because the Cinch connector that mates to the Sound Disks is too large to pass through the opening. To do this:**

  (a) Grasp the end of the SCSI cable with the flat 50-pin header for the SSP-3's SCSI Connector.

  (b) Starting from the rear of the Macintosh, *carefully* bring the end of the cable through the opening for the slot selected for the SSP-3 card. This may require a little manipulation to get the connector through the opening provided.

> **Note:** For the Macintosh IIsi, the cable must be threaded through the slot on the NuBus adapter as well as through the opening in the rear of the IIsi.

  (c) Mate the header on the SCSI cable to the SCSI Connector on the SSP-3 card so that the cable crosses the component side of the board.

  (d) Bend the SCSI cable to the right so that it fits through the U-shaped cutout on the metal connector plate, at the back of the SSP-3.

  There is a metal sleeving on the cable. Seat this sleeving in the U-cutout and use the two screws provides to secure the cable to the SSP-3's rear mounting bracket.

The SSP-3 card is now ready for installation.

- **Seat the SSP-3 onto the multipin female NuBus connector, being careful not to damage any pins on the connector. Align the card and push it into its slot so that it seats firmly, with the mounting bracket at the rear of the card flat against the backplate inside the Macintosh. It should not feel springy. On some Macintosh models, there is a small vertical alignment pin that fits into the top of the SSP-3 card's mounting bracket to hold it steady.**

  To install in a Macintosh IIsi, first install the SSP-3 into the NuBus adapter, then install the adapter into the Macintosh, following the directions from Apple.

If the SSP-3's rear mounting-bracket does not rest firmly on the Macintosh case or if the card feels springy on its connector, remove the SSP-3 and check for bent or damaged pins. Contact your dealer or Sonic Solutions if you have a problem with installation.

- **Replace the cover on the computer.**

The SSP-3 installation is complete. The next step is to connect the SSP-3 card to the Sound Disks.

Sound Disk & SCSI Setup

Sonic Solutions Sound Disks are large, high-performance SCSI hard disks that store digital audio for use with the SonicStation. To be useful, a SonicStation must include at least one Sound Disk. The SSP-3 card and Sound Disk(s) are connected in a SCSI "daisy chain." There are a few points to understand about SCSI systems before proceeding.

a) A signal-carrying "bus" connects the SSP-3 and all Sound Disks by means of 50-conductor cables. The total length of the bus cannot exceed 5 meters (15 feet).

b) The SCSI bus must be "terminated" at each end. SCSI Terminators keep impedance mismatches and signal reflections from corrupting data. The SSP-3 card already has termination built onto the card.

The Sound Disks do not have built-in terminators. The last Sound Disk in the chain must be terminated by connecting the in-line terminator included with the SonicStation to the disk's unused connector. The SCSI terminator is a small, solid unit with a 50-pin female Cinch connector on one end and a male Cinch connector on the other.

c) Each SSP-3 card and Sound Disk has a SCSI identification number (SCSI ID). Valid SCSI ID numbers are 0 through 7. The SSP-3 card automatically assigns itself ID number 7, and the user assigns an ID number between 0 and 6 to each disk drive.

> Each Sound Disk must have a different SCSI ID number. It does not matter what disk drive has what number, so long as each has a <u>different</u> number.

Disk Drive Setup

To connect one or more Sound Disks to the SSP-3 card:

- **Turn off the power on the Macintosh and all disk drives.**
- On the back of each Sound Disk cabinet are one or two small selector switches that set the SCSI ID number for each drive. You must specify a different SCSI ID for each drive in your system.

> **IMPORTANT!:** Make sure that:
>
> a) No drive has ID 7. This number is reserved for the SSP-3 card.
>
> b) Each drive has a different number between 0 and 6. Select the ID by using the selector switch on the back of the drive cabinet.

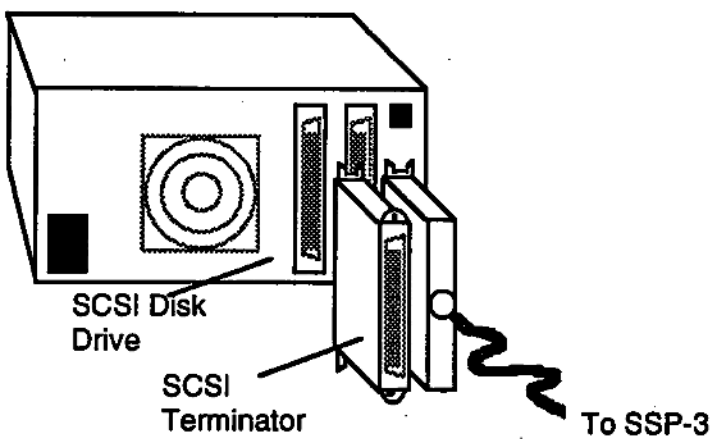

FIG. 1-2: Cabling the SSP-3 card to the Sound Disk

- Each Sound Disk drive has two identical SCSI connectors. Attach the SCSI cable from the SSP-3 card to one of the SCSI connectors on the disk drive. It does not matter which connector is the "input" and which is the "output." Both are the same.

- If there is more than one drive cabinet to be connected, attach a SCSI extension cable, no longer than 3 feet, from the remaining connector on the first cabinet to one of the connectors on the second cabinet. Repeat for all cabinets in the system.

- Attach the SCSI terminator to the remaining SCSI connector on the last cabinet in the chain.

Connecting Audio

The SonicStation receives input and delivers output digitally, using fiber-optic cables. To get audio in and out of the system, it must be connected with digital audio devices compatible with this form of audio. An increasing number of Compact Disc players, digital audio tape (DAT) machines, and digital preamplifiers send and receive digital audio in optical form. These models are directly compatible with the SonicStation.

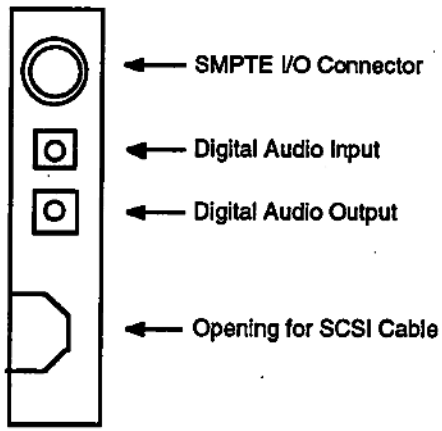

FIG. 1-3: The rear mounting-plate of the SSP-3 carries two digital audio connectors, a multi-pin connector for SMPTE time code, and an opening through which the SCSI cable is run.

The SSP-3 card carries two optical connectors for digital audio on its rear plate. The connector next to the 8-pin mini-DIN is a two-channel input, while the other connector provides two-channel output. These jacks are connected to external equipment using the supplied fiber-optic cables.

> The fiber-optic cables may be shipped with or without protective covers over the connectors. If these are present, be sure to remove them before attempting to connect the cable.

The fiber-optic connectors are keyed for proper orientation. Observe this orientation when connecting the cables.

For non-optical equipment, Sonic Solutions manufactures a series of converter boxes in half-rack size packages to connect to various digital and analog formats.

- **SS-610 A/D-D/A Converter** connects to analog tape machines and amplifiers. A single SS-610 provides analog-to-digital (A/D) conversion for two channels of input, and simultaneously converts two channels of digital audio to analog (D/A) for monitoring or recording onto analog media. The SS-610 also has an auxiliary output useful for routing audio to a DAT recorder or other device, while monitoring from its analog outputs.

- **SS-611 Optical Converter** for use with equipment based on the IEC-958 specification for digital audio I/O using XLR (AES/EBU) or RCA (S/PDIF) connectors. One SS-611 performs input and output conversion for two channels of audio, with simultaneous output in both formats.

- **SS-612 SDIF Converter**, used with the Sony PCM-1630 and other devices using SDIF-2 (Sony Digital Interface Format 2). SDIF-2 uses BNC connectors. Each cable carries one channel of digital audio, while a separate cable carries a Word Clock needed for proper decoding.

System Clocking and Digital Audio

In order to receive and process digital audio, the SonicStation must have a single *sample clock*. In normal operation, this clock is derived from the digital audio signal coming into the SSP-3's optical input. If the input to the SSP-3 is disconnected or turned off, the SonicStation will "drift" to a non-standard sampling rate, with the result that the output devices or devices will either mute, or play audio that is off-pitch.

In this case, the SonicStation can be set in software to clock from one of two on-board crystal oscillators at 44.1 or 48 kHz. The procedure is described under "Troubleshooting Audio I/O." Other situations can occur in which the sample rate of the input device is incompatible with that of the output device, and these circumstances are also covered in that section.

A Few Notes About DAT

In many ways, a Digital Audio Tape (DAT) machine is perfect for use with the SonicStation, providing analog-to-digital and digital-to-analog conversion, input from and output to tape, and an archival medium in a single reasonably priced unit. However, there are a few points to consider in using DAT with the SonicStation, and in selecting a unit for that purpose.

- Most DAT machines cannot play a tape and provide monitoring from digital audio input at the same time. If a DAT machine is the sole loading and monitoring device, the user will find it difficult to use the SonicStation's background loading feature.

- Many DAT machines will not convert a digital audio input back to analog unless the machine is in record. This usually means putting a tape in the transport and putting the device into Record/Pause. Over time, this increases wear on the playback and recording head.

- Some units, particularly consumer models, do not produce a digital audio output until a tape is played. Since the SonicStation normally depends on its input to clock the entire system, this can be a problem.

- Consumer DAT machines only accept digital audio input at a 48 kHz sample rate. This can be very inconvenient if there is a need to work with material recorded at 44.1 kHz, and it makes it nearly impossible to master for Compact Disc using these devices.

None of these are reasons to avoid using DAT, but they make it less than ideal for all conversion and storage needs. Using another device for output conversion, such as the **SS-611 A/D-D/A Converter**, overcomes most of these obstacles, particularly if a professional model DAT is selected. Using two DAT machines is another good option, again, particularly if at least one unit has professional features.

Installing the SonicStation Software

The SonicStation software is delivered as several Macintosh files spread across multiple floppy diskettes. These files must be assembled into a single executable file on the Macintosh hard disk. Disk 1 of the SonicStation software set includes a special application called "*Installer* " that automates this process.

> **IMPORTANT!** Before beginning installation, make sure there are at least 5 megabytes of free space on the Macintosh hard disk.

First Time Installation

To install the SonicStation application on the Macintosh hard disk:

- **Insert Disk 1 into the Macintosh floppy drive. Double-click the Disk 1 icon to show its contents.**
- **Double-click the Installer icon on the first floppy disk.**
- **Insert each disk as *Installer* prompts for it.**

When the installation is complete, the entire SonicStation application will be installed on the Macintosh hard disk. The original disks should be stored in a safe place in case it becomes necessary to re-install the software.

"SND" and "Sonic" Folders

After installation, two new folders will be found on the hard disk: "**SND**" and "**Sonic**." Initially, **SND** is an empty folder that the SonicStation program uses to store needed information.

> **IMPORTANT!** *Do not change the name of the **SND** folder or move it into another folder. If you do so, the system will not be able to locate it when needed.*

The **Sonic** folder contains the SonicStation application and several files that are helpful in using the system.

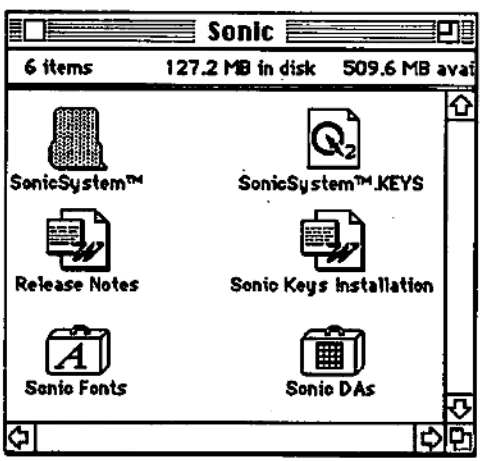

FIG. 1-4: The Sonic Folder Window

A set of Release Notes for the current software revision is included as a text file. Read this document before starting the SonicStation to find out the latest changes and new features.

Installing Updates

Updates are installed by the same procedure as the original sofware. It is important, however, to clear out the **Sonic** folder, or change its name, before installing updated software.

> IMPORTANT! When installing an update to the SonicStation software, remove or rename the existing **Sonic** folder before installation. Renaming the existing folder to "**Sonic.*version number***" will let you retain the older Sonic application on your Macintosh disk while distinguishing between multiple copies. There is no need to move or rename the **SND** folder.

If the current version is not renamed or removed, installing the new version will produce duplicate files in the Sonic folder. The new version can be recognized by the suffix ".1"

When installing software updates, it is usually desirable to retain established preferences and methods of operation. Follow the instructions enclosed with the software update to keep preferences intact.

Installing Sonic Fonts

The SonicStation requires certain fonts or typefaces to display the letters and numbers on the Sonic Mixing Desk. If this is the first time the SonicStation software has been installed on the system, or if the Macintosh System Folder has been changed, you should install the fonts included in the Sonic folder.

If running under Macintosh System 6, install the Sonic fonts by using the Apple *Font/DA Mover* application. The *Macintosh Utilities User's Guide* or the *Macintosh Reference,* which came with the Macintosh, contains instructions regarding the use of this program.

System 7 users should simply place the accessories in the System Folder. The system "knows" where each item should be installed, and takes care of that for you. (Just answer "Yes" when the dialog appears that asks if the items should be placed in their proper folders.)

> **NOTE:** In System 7, all applications and desk accessories must be quit before moving fonts and DAs into the System Folder.

There is no need to re–install the Sonic fonts and desk accessories when updating the software.

Installing and Using CE Software's QuicKeys®

QuicKeys, from CE Software, is a utility program useful in operating the SonicStation. It lets the user create *macros,* which assign a command or sequence of commands to a single keystroke or keystroke combination. Assigning commands to keys speeds operation substantially, and use of this program is recommended.

Sonic Solutions supports the use of *QuicKeys* with a file of predefined key assignments. This file, called SonicStation™.Keys, is placed inside the **Sonic** folder by the *Installer.* To use these key assignments, follow the steps outlined below. Because of the versatility of *QuicKeys,* this procedure may not match your particular configuration. If you have difficulty installing your Sonic QuicKeys, contact CE Software Customer Support for help in installing keysets with your specific Macintosh or Quadra configuration.

A copy of *QuicKeys* 2 can be purchased from Macintosh software dealers, or directly from:

CE Software, Inc.
PO Box 65580
West Des Moines, Iowa 50265
USA
Telephone – 515.224.1995

The most recent version of *QuicKeys* is 2.1.1 as of March 1992.

Installing QuicKeys for the SonicStation

To Install *QuicKeys* and allocate memory to hold the SonicStation keyset:

- **Install the Quickkeys following the instructions the Quickkeys manual**
- **Under the ⌘ menu, choose Control Panels. Select QuicKeys 2™ in the dialog box or window that appears.**
- **In the resulting *QuicKeys* dialog, click the Configure button.**

- In the *QuicKeys* 2 Options dialog that appears, click the Custom radio button and enter 36 into the Buffer Size field.
- Click OK to close the Options dialog, and restart your Macintosh or Quadra to activate the *QuicKeys* memory assignment.

To Install the SonicStation keyset

- Locate the QuickKeys Folder inside the Preferences folder in the System Folder on the Macintosh boot volume.
- Inside the QuickKeys Folder, locate the Keysets folder
- Move the file "SonicStation™.keys" from the Sonic folder to the Keysets folder.
- Rename this file as just "SonicStation™," deleting the suffix ".keys"
- Close the System Folder and boot the SonicStation application

If the name of the SonicStation application is changed the name of the keyset file must be changed to match.

This completes installation of the SonicStation hardware and software.

II. Checkout

Once the SonicStation hardware and software have been installed, it is a very good idea to test them to make sure tha everything is correctly connected and working properly. This also provides valuable experience in the system's most basic operations.

Starting the SonicStation Software

Once the elements of the SonicStation have been assembled, the SonicStation software can be launched. From the Macintosh desktop, open the **Sonic** folder and double–click the SonicStation application icon.

After a few moments, the **Status Window** appears at the bottom of the screen and text begins to scroll through it. During operation, the SonicStation prints information concerning its internal state and processes in this window.

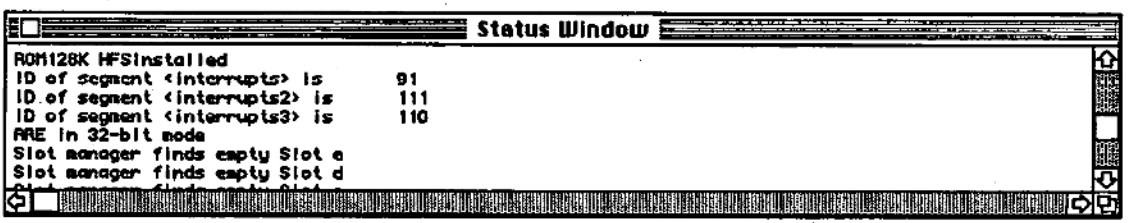

FIG. 1-5: The Status Window displays information about the SonicStation's states and actions while the application is launching.

During startup, the SonicStation initializes and tests the SSP-3 card hardware, loads software into the program memory of the DSP chips, finds all devices on the SCSI bus and reads their file directories into memory, and initializes and opens the Sonic Mixing Desk screen.

Typically, it takes a few minutes to do all this. The exact amount of time depends on the number and capacity of storage devices attached, and the number and complexity of files already on the disk(s). With a newly-formatted Sound Disk, the application launches more quickly. The length of time needed for launching increases as more sounds are recorded on the disk.

At the end of the boot cycle, a Warning alert appears that instructs the user to check all configurations and preferences. This is of no concern while getting started on the system, but it becomes important when updating the system software. At that time, the user will have developed preferences and methods of operation, and will want to make sure that these are retained when the new version software is installed.

Once the application finishes launching, the Sonic Mixing Desk appears on the screen.

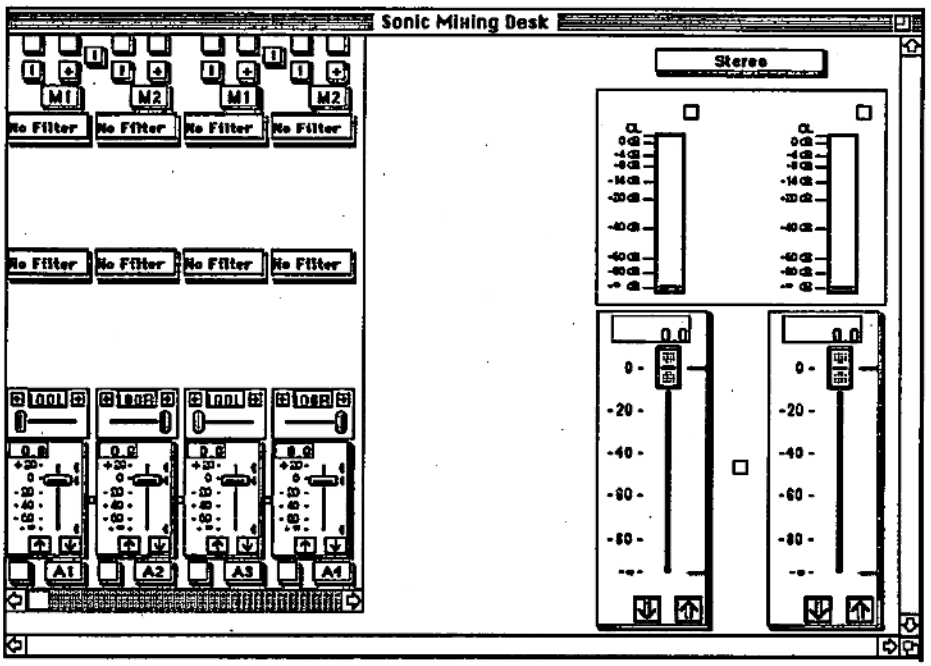

FIG. 1-6: The Mixing Desk is the first screen that appears after the SonicStation software finishes launching.

The Mixing Desk is described in detail in Chapter 4. For now, note the four Channel Input Strips in the left-hand portion of the screen, and the Level Meters and Master Faders in the right-hand section.

If any problems are encountered in starting the system software, carefully check to make sure that all system components are installed correctly. If problems persist, contact your dealer or Sonic Solutions.

Using the SonicStation Menus

When the SonicStation application is running, several items are listed across the top of the Macintosh screen. These are the SonicStation's main menus. Using the mouse, move the cursor to one of these items, then click and hold to view a list of selections. The menu bar is the control center of the SonicStation, and the commands in these menus provide absolute control of its operation.

FIG. 1-7: The main menu bar is the control center for the SonicStation.

All of the SonicStation's commands and operations are accessed through the menu bar.

The first menu you will use is the File menu, which provides control of SonicStation sound documents (Sound Files and Edit List), as well as settings for user preferences and system management.

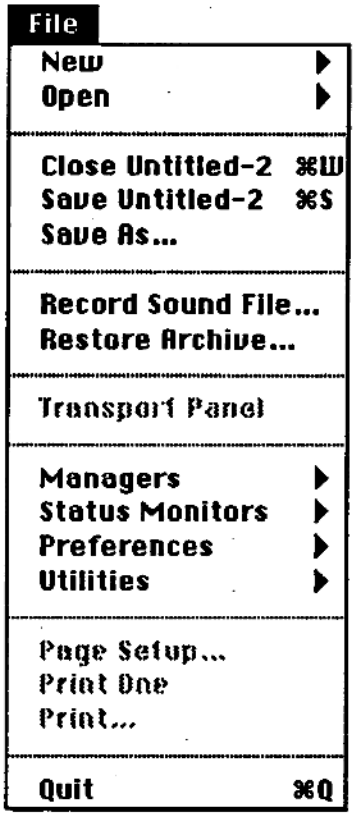

FIG. 1-8: The File menu is the center of SonicStation activity. The various commands are discussed throughout the remainder of this manual.

Playing Audio Through the SonicStation

The next step in verifying the SonicStation's operation is to pass an audio signal through it.

Patching Audio Input Through the Desk

On the Mixing Desk screen, locate the four Channel Input Select buttons located at the base of the Channel Input Strips. These select audio sources for monitoring.

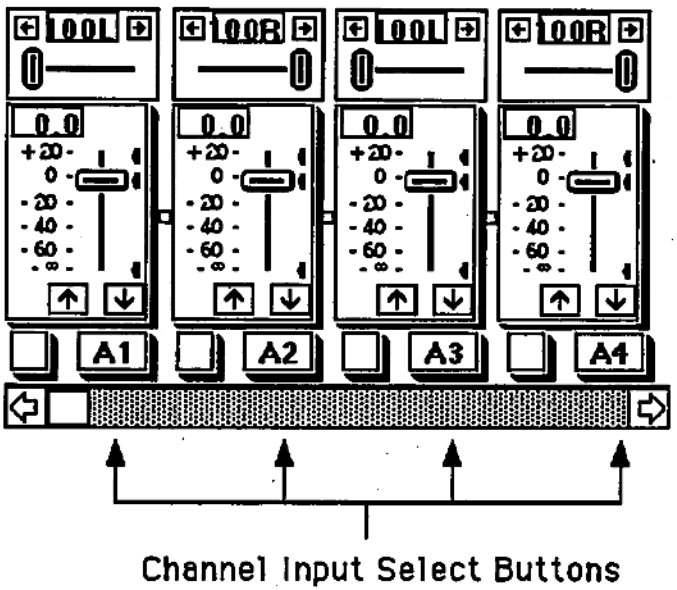

FIG. 1-9: The Channel Input Select buttons on the Mixing Desk are used to route digital audio from the Sound Disk or audio inputs.

- Click and hold on one of the Channel Input Select buttons to make a pop-up menu of possible selections appear. When the SonicStation is first launched, these are set to A1 through A4, the main playback (or "Audition") channels from the hard disk.

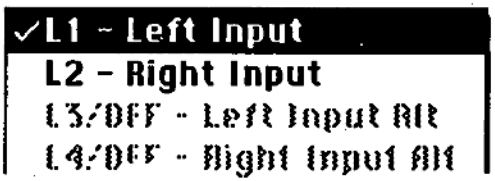

FIG. 1-10: Selecting the SonicStation's left channel line input for monitoring.

- Select L1 and L2 as the inputs for the first two channels to patch the SonicStation's digital audio inputs into the Desk.

FIG. 1-11: To monitor the line inputs, the two left-most Channel Input Select buttons are set to L1 and L2.

Monitoring Audio Input

With L1 and L2 assigned to the channel inputs, an audio signal can be passed through the system. A digital audio signal from CD, DAT, analog converter, or other source will be routed to the two channel input strips on the Mixing Desk, and from there through the Master Faders to the SonicStation's outputs.

- Send an audio signal into the SonicStation and listen for output. Observe the meters in the upper right of the Desk window, which display the level of audio at the Mixing Desk's output, to be sure that the signal is passing through the system.

  In order to hear the digital audio signals sent from the SonicStation outputs they must first be converted to analog, and sent to the monitoring system.

> NOTE: If a single DAT machine is used to provide both input and output, it may not be possible to monitor the SonicStation's audio input.

Notice that the faders on the Desk can be used to change audio level, and that the Desk filters may be used for real-time processing of audio coming through the system.

Checking the Sound Disk(s)

Once audio throughput is established, the next step is to check the Sound Disk(s) and record audio.

- **Click and hold on the Managers command in the File menu to make a Macintosh "pull-right" submenu appear, displaying the available options.**

  The Sound File Manager and Sound Disk Managers are utilities for examining and maintaining the Sound Disks attached to the system. They provide information about the capacity and current contents of the disk(s).

- **Choose Sound Disk Manager...**

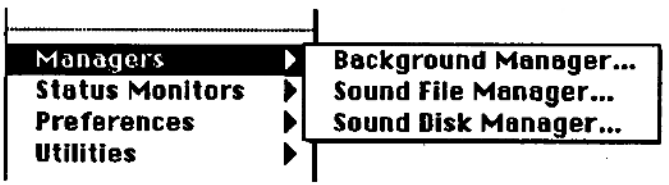

FIG. 1-12: The Sound File and Sound Disk Managers are accessed from the Managers command in the File menu.

If the Sound Disks are properly connected and powered up, the **Sound Disk Manager** window will appear. Each Sound Disk attached to the system is represented by a line in the window. This line lists the recording time available (in stereo minutes at 44.1 kHz sampling rate), time already used, and total capacity of the disk.

Each disk also has a name assigned by the user, as well as a "System Name" that is assigned internally by the program and cannot be altered.

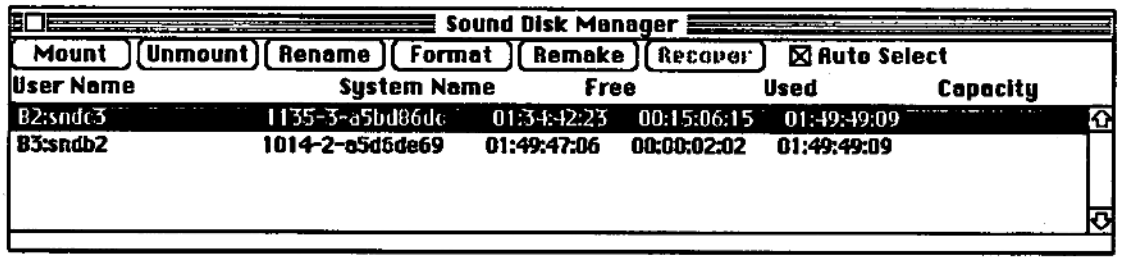

FIG. 1-13: The Sound Disk Manager window lists each disk installed on the system, along with its free time, used time, and total capacity.

If the warning in Fig. 1-14 appears, carefully check to see that:

a) The Sound Disks are connected correctly.

b) Each disk is assigned a different SCSI ID number.

c) Power is turned on for each disk.

> IMPORTANT! The Sound Disks <u>must</u> be fully powered at the time the SonicStation software is launched.

- If a fault is found in the way the Sound Disks are connected, choose **Quit** (⌘Q) from the **File** menu to quit the SonicStation, then relaunch the software. If problems persist, contact your dealer or Sonic Solutions.

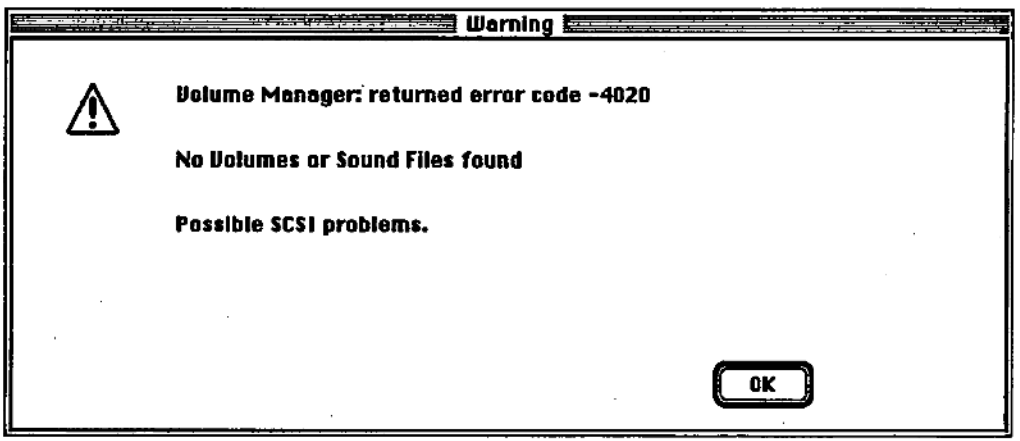

FIG. 1-14: If the Sound Disks are not properly connected, this warning appears when the **Sound Disk Manager** is selected.

- Click the **Sound Disk Manager**'s close box when finished with the window.

III. In Case of Trouble

Troubleshooting Audio I/O

If any problems are encountered in getting audio through the system, don't panic. It is likely that the problem is very simple.

Symptom:

No Level on Mixing Desk meters

- **Verify that the Channel Input Select buttons for the two leftmost channels of the desk are set to L1 and L2.**
- **Verify the connection(s) from the digital source device or devices to the SSP-3 card. Check for bad cables.**
- **If routing signals through one or more of Sonic Solutions interface boxes, make sure that any routing switches on the converters are in the correct position, and that the source device is indeed outputting digital audio.**

The majority of problems getting audio through the SonicStation turn out to be simple patching problems such as these. If the level meters are still not showing audio getting into the system, then you should:

- Go to the File menu and choose Preferences. A pull-right submenu appears with a list of different types of user-selectable preferences. Choose Audio I/O Prefs...

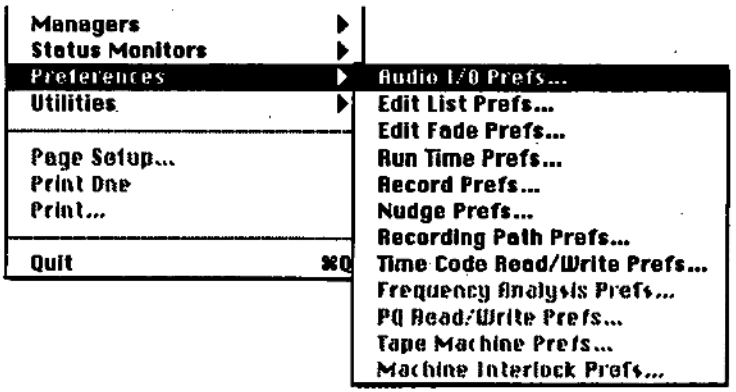

FIG. 1-16: The Preferences selection in the File menu leads to a list of separate dialogs that let the user customize the operation of the SonicStation to suit their professional needs.

Audio I/O Prefs.. pulls up a dialog which controls various aspects of the SonicStation's digital audio configuration.

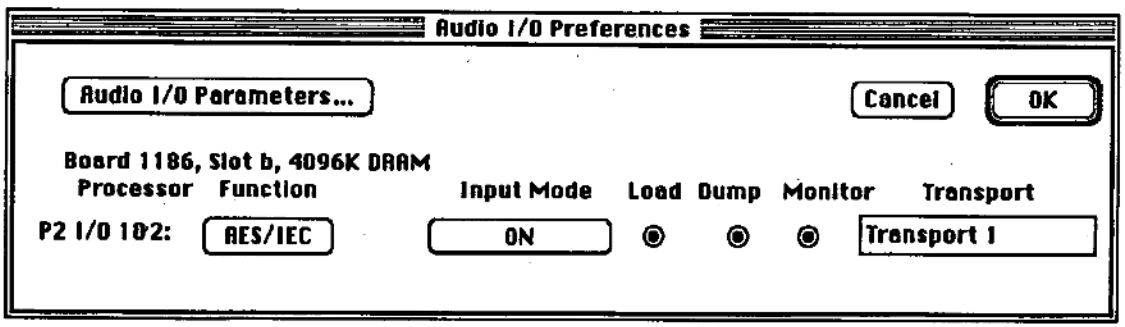

FIG. 1-17: The Audio I/O Preferences dialog is useful in diagnosing and correcting audio throughput problems.

- **Click OK to exit the dialog and confirm the settings.**

This is a trick that can be helpful in the (unlikely) situation that the audio signal path seems to get "stuck" and in a non-working state. Exiting this dialog seems a simple action, but in actuality, it causes a complete reset of the SSP-3 card's DSP chips and reload their program memory.

If the problem persists, it's time to look deeper. Before doing so, however, check the audio connections and Desk patching one more time. It is uncomfortably common to spend time searching for a subtle problem, when the real cause of failure is simple.

No Audio Output

If audio signal level appears on the Mixing Desk's Output Level Meters, but not at the monitor speakers or output device, continue the methodical procedures used to troubleshoot the input.

- **Check that the Monitor Output Select button (at the top of the channel strip) for each mixer channel is set to M1 (left) or M2 (right). These are the default settings, and the only ones valid for the SonicStation configurations.**

- **Verify that the SonicStation's digital audio output is connected correctly to the output device. If there are converter boxes or other devices in the chain ahead of the final output device, verify that all cables, connections, and front-panel settings are correct and functioning for each device.**

- **Make sure that the monitoring (D/A) device's analog output is connected to an amplifier/speaker combination, that the monitor devices are powered up, and that the volume is not set to zero.**

Channel Status and Sampling Rate.

If the problem is not found in rechecking the hardware connections, it could be a mismatch of digital audio format between the SonicStation's current settings and the specifics of the digital audio format expected by the target output device.

To investigate, return to the **Audio I/O Prefs...** dialog described previously.

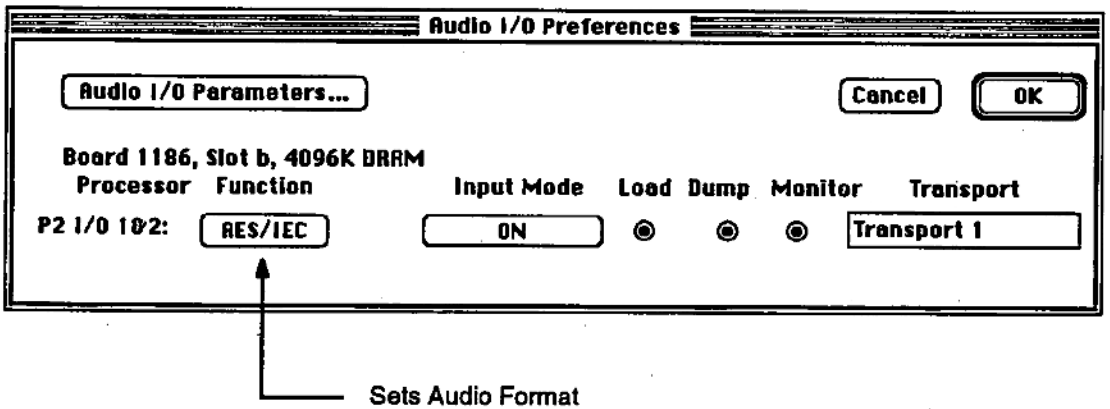

FIG. 1-18: The Function button in the Audio I/O Preferences dialog provides control of the digital audio format.

- **Click the Function button (labeled "AES/IEC") in the lower left section of the dialog.**

  This opens the **Channel Status** window, where you can examine the settings of the Channel Status bits embedded in the digital audio bit stream, and set the SonicStation's own Channel Status for output.

The Channel Status Window

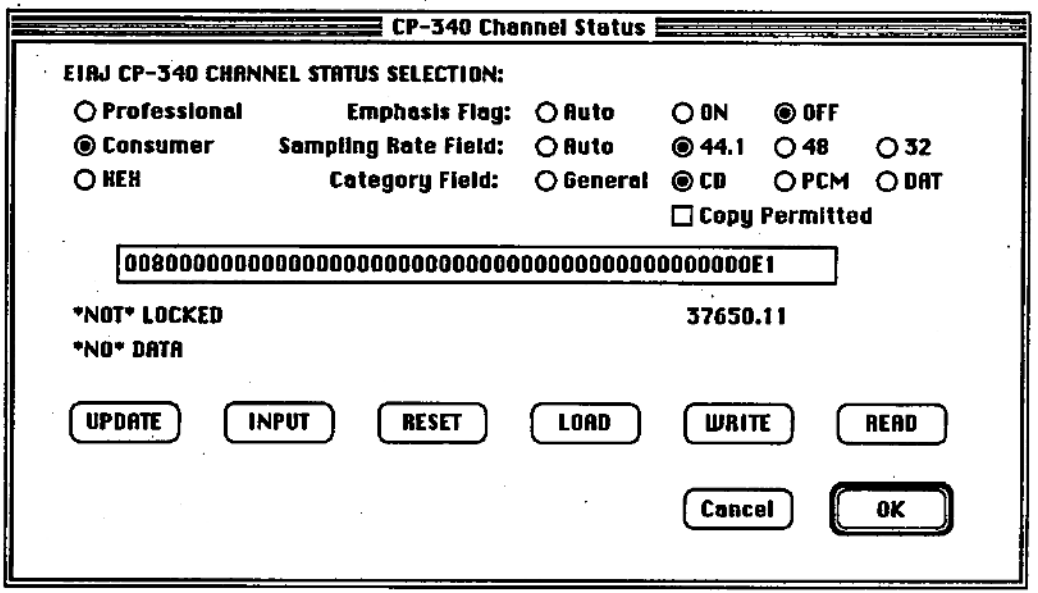

FIG. 1-19: The Channel Status window is useful in troubleshooting audio I/O problems.

The **CP-340 Channel Status** window has a number of features. It is not our purpose to describe them in detail at this time, but to show how to use this window to solve specific audio I/O problems. Familiarity with just a few features of the **Channel Status** window provides all the information needed to resolve any conflict.

FIG. 1-20: Channel Status Input button.

- **Click the Input button to read the Channel Status data and sample rate from the input source.**

The data field in the center of the **Channel Status** window shows the Channel Status information, with the sample rate appearing directly below.

```
00800000000000000000000000000000000000000000000E1

LOCKED                                    44101.72
DATA PRES
```

FIG. 1-21: The centerpiece of the Channel Status window is the "data" field and the information about audio input status and sample rate.

If valid audio input data is connected to the SSP-3, this section of the display reads approximately as shown, with data "present," the clock "locked," and a long string of "zeroes" with a few letters and/or numbers near the beginning and end.

- If the display says "NO DATA," digital audio is not connected.
- If data is present, but the clock is not locked, then there is something wrong with the sample rate of the input source. In this case, the data word will probably also be seen to change each time the "Input" button is clicked, with a lot of "garbage" characters visible.

The figure shown for the source's sample rate is approximate, even though it is displayed to two decimal points. Do not be concerned if the value shown fluctuates slightly. This is normal.

EIAJ CP-340 CHANNEL STATUS SELECTION:

○ Professional	Emphasis Flag:	○ Auto	○ ON	◉ OFF	
◉ Consumer	Sampling Rate Field:	○ Auto	◉ 44.1	○ 48	○ 32
○ HEX	Category Field:	○ General	◉ CD	○ PCM	○ DAT
			☐ Copy Permitted		

FIG. 1-22: The Channel Status window displays the state of all of the standard "flags" specified as part of the digital audio data stream.

If the SonicStation is getting input, as shown by the Meters on the Mixing Desk, but there is no audible output, the probable cause is a mismatch between the Channel Status bits in the SonicStation's output, and that expected by the target output device.

LOAD

FIG. 1-23: The Load button sets the Channel Status bits of the SonicStation to match those appearing in the "data" field.

To ensure that the SonicStation's Channel Status bits match those expected by the output device:

- **Use the Input button to read the Channel Status bits directly from the output device's own output.**
- **Click the Load button to apply the same data to the SonicStation's output.**

Common Channel Status mismatches fall into a few categories:

- Some DAT machines, especially non-professional models, record only at a sample rate of 48 kHz, and mute if presented with data flagged as 44.1 kHz. The sample rate flag must actually be set at 48 kHz for these DATs to work.
- Some machines also need to see the Channel Status bit for "Professional" or "Consumer" format set a certain way.
- A few digital audio devices (for example, the Sony D-2 Digital Video recorder) require an error correction word for the channel status word. When "Professional" data format is selected, the Channel Status window shows a check-box that lets it calculate the correct value for this part of the status word.

Switching the SonicStation to Internal Clock

As mentioned earlier in this chapter, the SSP-3 card has two onboard crystal oscillators. In the case that digital audio is disconnected from the input of the SSP-3, the sampling clock may be switched to the internal oscillator by turning the audio input off:

- Open the "Audio I/O Preferences" dialog as described above.
- To select the clock rate for self-clocking, click Audio I/O Parameters.

Audio I/O Parameters...

FIG. 1-24: The Audio I/O Parameters button opens a dialog window where the default sample rate for self-clocking can be set.

- Click the Default Sample Rate item in the window that appears to select it.
- Select either 44.1 or 48 kHz.

- **Click Input Mode.** This opens a dialog that lets the user turn the input off.

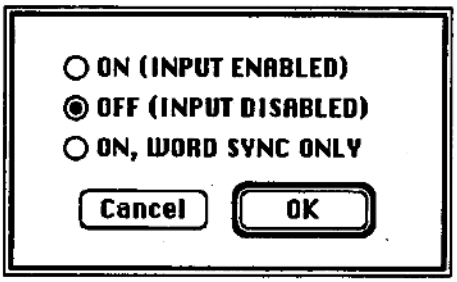

FIG. 1-25: Turn the audio input off to enable self-clocking.

- After selecting Off, click OK to exit.
- Click OK in the Audio I/O Preferences window to exit.

Troubleshooting the Sound Disk Chain

If problems are encountered with the SCSI Sound Disk or Disks(s) attached to the system. There are three possibilities:

- The devices are not correctly connected to the SSP-3 card.

  This is one of the most probable cause of any SCSI problem. The SCSI system of "daisy-chain" connectors, terminators, and distinct SCSI ID numbers is not difficult, but may not be particularly straightforward the first time a system is configured.

  If problems are encountered with the Sound Disks, first reread the section on Sound Disk installation earlier in this chapter and carefully recheck each connection in the chain, observing the rules of SCSI connection. These rules are not complicated, but it is easy to make a mistake, and the Sound Disks will not work in that event.

- The Sound Disks were not powered on when the SonicStation application was started.

  The SonicStation checks the SCSI chain during bootup. If the Sound Disks are not powered on at that time, the system cannot "see" them. This is a common problem, and can occur any time the system is started.

  The only solution is to quit the application, power the disk drive, and restart the application.

- One of the Sound Disks, the SSP card's SCSI port, or one or the connecting cables is defective.

  This is unlikely. Make sure, however, that power is connected and switched on for all drives.

If checking the SCSI chain and examining the connected devices does not solve the problem, contact your dealer or Sonic Solutions. Also, see the last section of Chapter 5 on maintaining the Sound File system.

Summary

The process of setting up the SonicStation has two parts.

First, the hardware and software are setup and installed, then the system is checked out to ensure proper operation of all portions of the system.

If some part of the system does not pass check out, then the process of troubleshooting is used to isolate the fault and correct it.

Chapter 2

Getting Started: Recording

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Monitoring Input 3

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Starting the Recording 8

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Creating a New Edit List 12

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Selecting the Playback Group 19

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Summary 20

Introduction

The best way to learn the SonicStation is to use it. In this chapter, you will learn the very basics of recording, editing, and playing sound.

The steps in starting an edit session are:

- Record a Sound File on the SonicStation Sound Disk
- Create a new Edit List on the SonicStation
- Open the recorded Sound File into the Edit List

> On the SonicStation, sound is edited in a structure called an **Edit List**. This structure is also referred to sometimes as an **Edit Decision List**, or **EDL**. As used in this manual and in the SonicStation application, these terms are completely interchangeable.

Note: Using keyboard equivalents

Most of the SonicStation's menu commands are also accessible from the Macintosh keyboard. Some key equivalents are part of the SonicStation application, others are provided by means of CE Software's QuicKeys (See Chapter 1). The advantage of QuicKeys is that key equivalents can be easily changed by the user, and new commands and sequences of commands added.

The user should become familiar with key equivalents, and to use them whenever possible. To facilitate this, we supply a recommended set of QuicKeys key equivalents with the SonicStation software. Note that many of the key equivalents require the Macintosh extended keyboard.

In the tutorial portion of this manual, user actions that have assigned key equivalents, either as permanently installed SonicKeys or as user-alterable assignments in the included QuicKeys key set will have the key equivalent indicated in parenthesis.

Permanent SonicKeys are listed without prefix, and "soft" Quickeys are indicated where needed.

I. Recording a Sound File

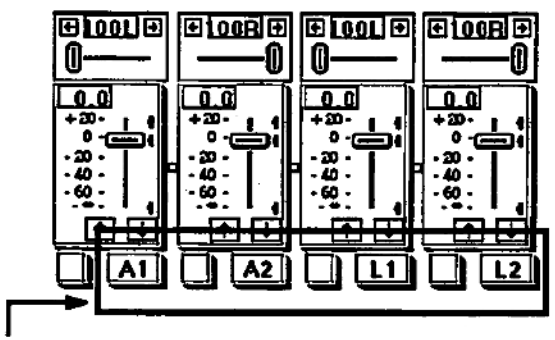
The SonicStation is a hard-disk based digital recording and editing system. Before editing, audio must be recorded onto the system's Sound Disk.

Monitoring Input

During recording, it is usually desirable to listen to the signal as it is recorded. The SonicStation Mixing Desk can be set so as to pass the digital signal from the stereo inputs directly to the output of the system.

The Channel Input Selectors on the Mixing Desk must be set properly to play audio from the Edit List. Check the Channel Input Select buttons beneath the Channel Faders on the Desk. These should be set to : **A1, A2, L1, L2.**

If they are not resently set that way, change them now, using the pop-up menu for each button.



Channel Input Select

FIG. 2-1: The Channel Input Select buttons at the base of the Mixing Desk's Channel Strips should be set to A1, A2, L1, L2.

Using DAT for input conversion

If a consumer DAT machine is used for monitoring, it may be necessary to put a tape in the DAT and/or hit "Record-Pause" on its front panel to set it to convert an incoming digital signal to analog.

Likewise, audio may not play back through a consumer DAT if the SonicStation is clocked incorrectly. Consumer DAT machines generally require that the external signal have a sample rate of 48 kHz. Also, some units create a "clock loop" when set for D/A conversion if both digital inputs and outputs are connected to the SonicStation.

The solution in cases such as this is to switch the SonicStation to run from its internal clock using the control button underneath the location display in the Transport Panel.

Preparing to Record

The biggest difference between recording on tape and recording on the SonicStation is that the SonicStation must prepare the Sound File, and allocate space for it on the Sound Disk before actual recording begins.

An audio recording on the SonicStation is stored as one or more monaural "Sound Files." When recording stereo, two separate Sound Files are created, one for the left channel and one for the right.

To start a recording:

- **Select Record Sound File... from the File menu to set up the SonicStation for recording. If QuicKeys and the SonicStation.Keys keyset are installed, the sequence Control-R may be used instead.**

FIG. 2-2: The Record Sound File... command in the File menu prepares the SonicStation for recording.

The command **Record Sound File...** brings up the **Record Sound File** dialog and the Transport Panel, which is the control center for record and playback on the SonicStation.

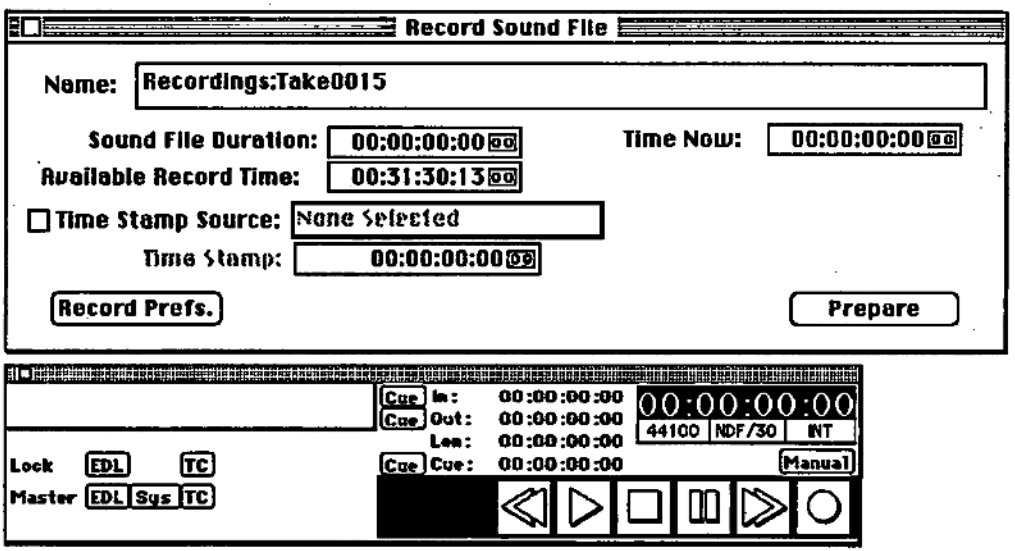


FIG. 2-3: The Record Sound File window specifies recording parameters, while the Transport Panel initiates and halts the recording.

The Record Sound File dialog provides facilities to control the recording process, and the way that the Sound File is stored on disk. Detailed information on the optional recording parameters is provided in Chapter 5.

The Transport Panel

When **Record Sound File...** is selected, the Transport Panel appears immediately beneath the Record Sound File window onscreen, is used to trigger record, playback, punch in/out, and lock to time code.

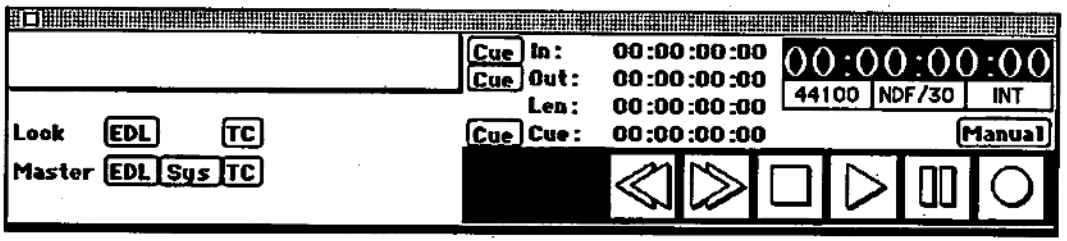


FIG. 2-4: The Transport Panel controls recording and playback of audio on the SonicStation.

The Transport Panel is designed to resemble the controls of an analog or digital tape recorder in appearance and behavior. In particular, note the Transport Control buttons in the lower right of the panel.

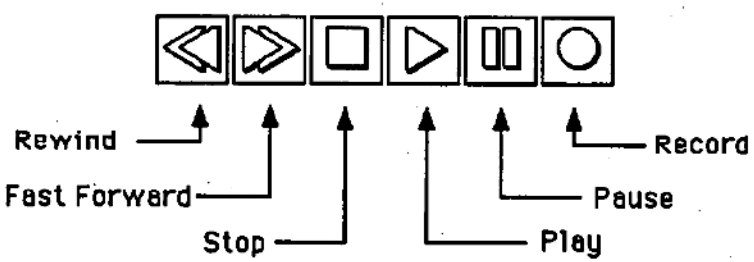


FIG. 2-5: The Transport Control buttons on the Transport Panel match those on conventional tape recorders.

When called up by the **Record Sound File...** command, the Transport Panel appears armed for recording, with the Record button set, and the Play and Pause buttons highlighted. To start recording, all the user need do is click the Pause button.

Starting the Recording

If desired, the user may enter a new name into the **Record Sound File** window and/or pre-specify the amount of sound to record. Actually starting the recording is simple.

- **Click to release the Pause button on the Transport Panel to start recording.**

The system then:

a) Pauses for a few seconds to prepare the Sound File for recording

b) If the duration is pre-specifed, the system starts a 10-second countdown, displayed in the field "Time Now," to let the user prepare to record.

b) Begins recording, with the time displayed in the "Time Now" field of **Record Sound File.**

NOTE: You may notice that "Time Now" increments in jerky steps of a second or two each. This is because the SonicStation always gives priority to audio, so its computing power is devoted to the task of recording rather than updating the screen.

Stopping Recording

Once the required duration is recorded, the Transport Panel is used again to terminate recording.

- **Click the Stop button on the Transport Panel to terminate recording. If the record time is pre-allocated, the system will stop automatically when that time is up**

When the recording is completed, an alert box appears that says:

Just a moment, Completing the recording...

After a few seconds, the message changes to read:

Just a moment, Updating the sound disk...

When the alert box closes, the Sound File is complete, and available for editing.

Recording Additional Takes

Each time a recording is completed, the system automatically increments the number of the take and arms itself for the next recording.

- **To start another take, click the Pause button on the Transport Panel.**
- **To exit the Record Sound File dialog, click the Mac "close box."**

Verifying the Recording

The **Sound File Manager**, introduced in Chapter 1, gives the user a convenient view of the Sound Files on disk, and the amount of space they use.

- Select **Sound File Manager...** from the submenu **Managers** under the **File** menu. (QuicKey Shift-Control-F)

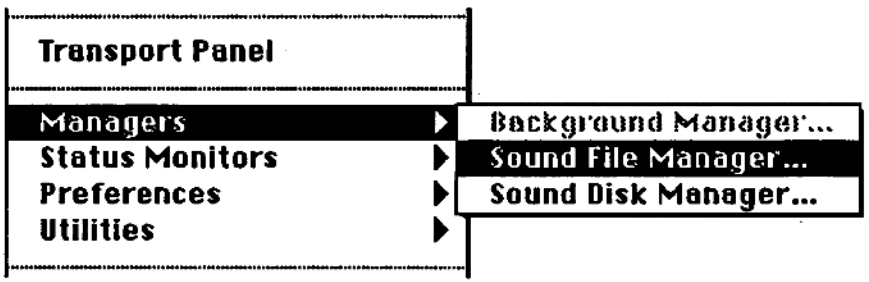


FIG. 2-6: The Sound File Manager is a convenient way to keep track of the contents of the Sound Disk.

When the Sound File Manager window appears, the Sound File or Files recorded will appear as pairs of files, one for each channel.

Additional notations indicate which Sound Disk each file is on, and it's length in time.

SoundFile Manager

Select All | Deselect All | Delete | Copy | Get Info | Next | Previous

Volume	Name	Duration
94:snd94	Recordings:Bach English Suite #2:Source.2	00:01:05:12
94:snd94	Recordings:Bach English Suite #2:Source.1	00:01:05:12
94:snd94	Recordings:Take0048:Source.2	00:04:03:21
94:snd94	Recordings:Take0048:Source.1	00:04:03:21

FIG. 2-7: **Each stereo Sound File appears in the "Sound File Manager" window as a pair of files. The system software assigns the names "Source.1" and "Source.2" to these files automatically.**

II. Placing Sound in an Edit List

To edit or play back recorded sound, the recorded Sound File must be opened into an Edit List (also called EDL or Edit Desision List), as described above. The is where recorded sound is assembled into the form desired for the final output.

Creating a New Edit List

To create a new Edit List:

- Go to the File menu. Choose New, holding the mouse button down to make the "pull-right" submenu appear. Still holding the mouse down, choose New Edit List (QuicKey ⌘-F13).

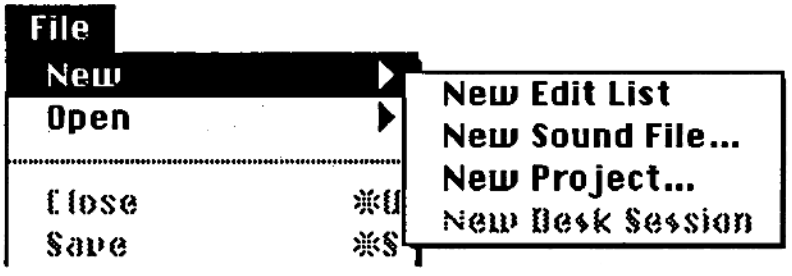


FIG. 2-8: The New command of the File menu brings up a "pull-right" submenu to create any of the standard types of SonicStation documents.

An Edit window appears onscreen above the Mixing Desk. This is where recorded audio is assembled into a finished product.

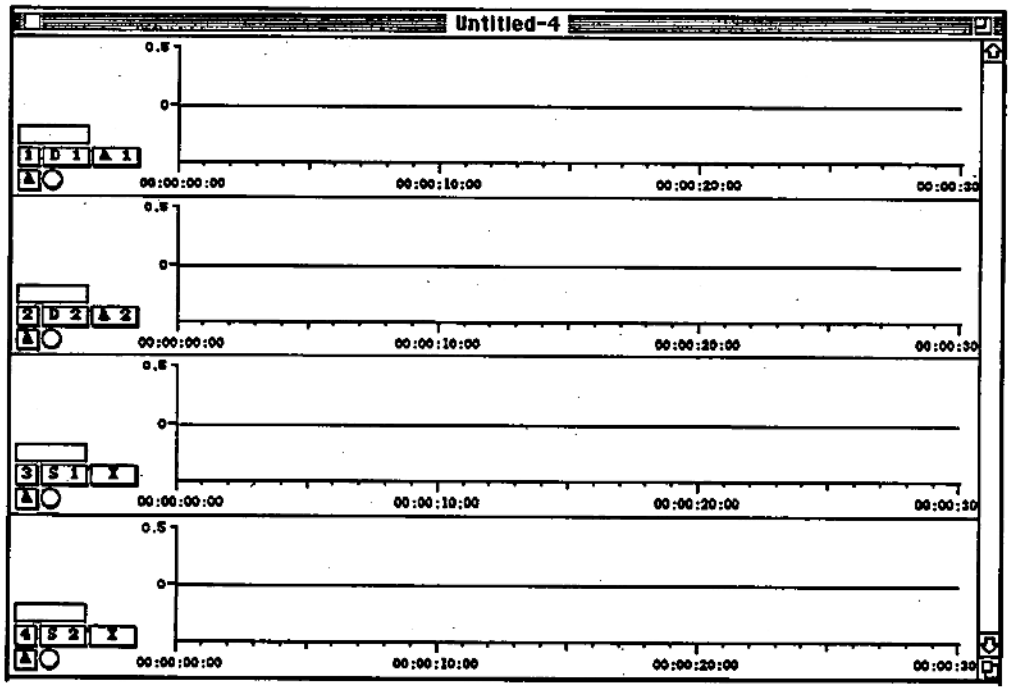


FIG. 2-9: The Edit window displays sound in horizontal "panels"

Each horizontal "panel" displays one channel of audio. This may be a single recorded Sound File or an edited composite of pieces (or "segments") from one or more files.

When the SonicStation is initially launched, the Edit display defaults to show four panels. This window can be changed to show far more panels and display audio in several forms, according to your needs.

Opening the Sound File

For playback and/or editing, the Sound File must be opened into an Edit List.

To open the previously-recorded Sound File:

- Choose **Open** from the **File** menu, then select **Open Sound File..** (QuicKey Control-O) from the pull-right submenu .

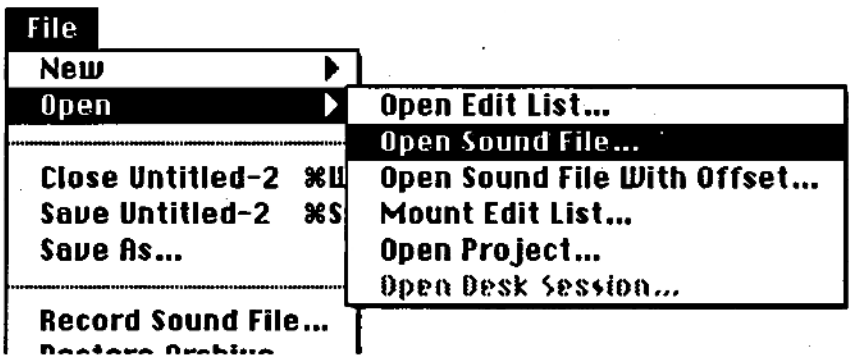


FIG. 2-10: The File menu's Open selection retrieves previously created SonicStation documents,.

The user must specify the Sound File to be opened by name and location. The Macintosh has a standard dialog for this type of selection.

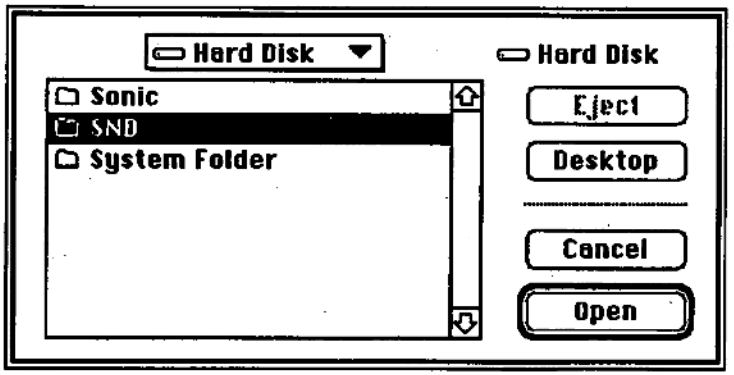


FIG. 2-11: Standard Macintosh selector dialogs are used when opening SonicStation documents such as Sound Files and Edit Decision Lists.

Because of vagaries in the Macintosh operating system, this dialog initially opens into the Sonic folder that contains the SonicStation application, rather than the SND folder that contains the recorded Sound Files.

To locate the SND folder, it is necessary to go "up" one level in the Macintosh file system.

- **Click on the box at the top of the selector dialog that says Sonic and hold the mouse button down to make a pull-down menu appear with the name of the Macintosh boot volume (disk).**
- **Select the Mac boot volume.**

After this is done, the window in the selector dialog shows all of the folders that are found on the disk. One of these is SND.

- **Select the SND folder and open it by double-clicking on the selection, clicking on the Open button, or pressing Return.**

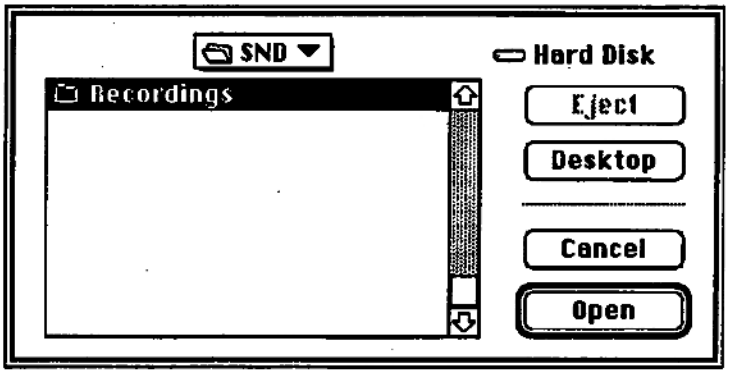


FIG. 2-12: The SND folder contains one or more sub-folders.

The Sound File created earlier in this chapter will be found in the Recordings folder.

- Open the **Recordings** folder.

Inside the Recordings folder, one or more folders named **Takexxxx** will be found, one for each recording made.

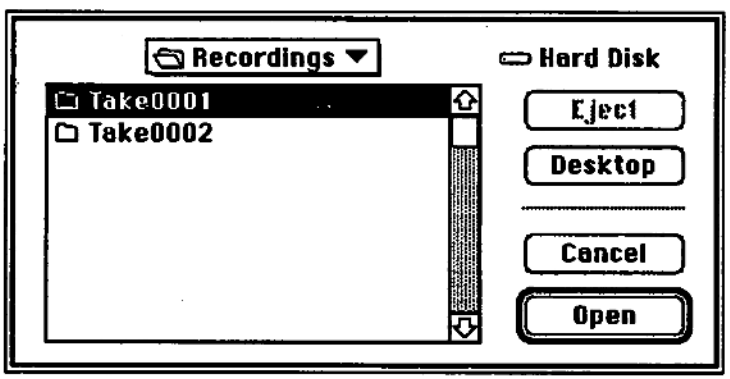


FIG. 2-13: The Recordings folder is the default storage location for Sound Files in the SonicStation.

- Open the **Take** folder that represents the Sound File to be opened.

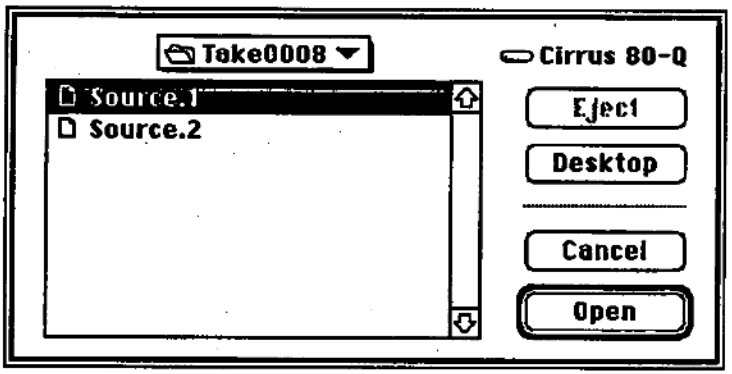


FIG. 2-14: The Take folder contains one or more files, each representing one channel of a recording.

The Take folder opens to reveal some number of actual Sound Files (two in this case), named **Source** with a suffix, ".1," ".2," etc. Each **Source** file represents one channel of audio: stereo recordings have two files, **Source.1** and **Source.2**, while monaural files have only **Source.1**.

To open the Sound File:

- **Double-click (or use the Open button) on Source.1. The SonicStation automatically opens both files.**

When the Sound File is opened, the selector window disappears and the system takes a few seconds to access the file on the Sound Disk drive and open it into the Edit window.

When the Sound File finishes opening, the waveform of the sound appears in the bottom two panels of the Edit window.

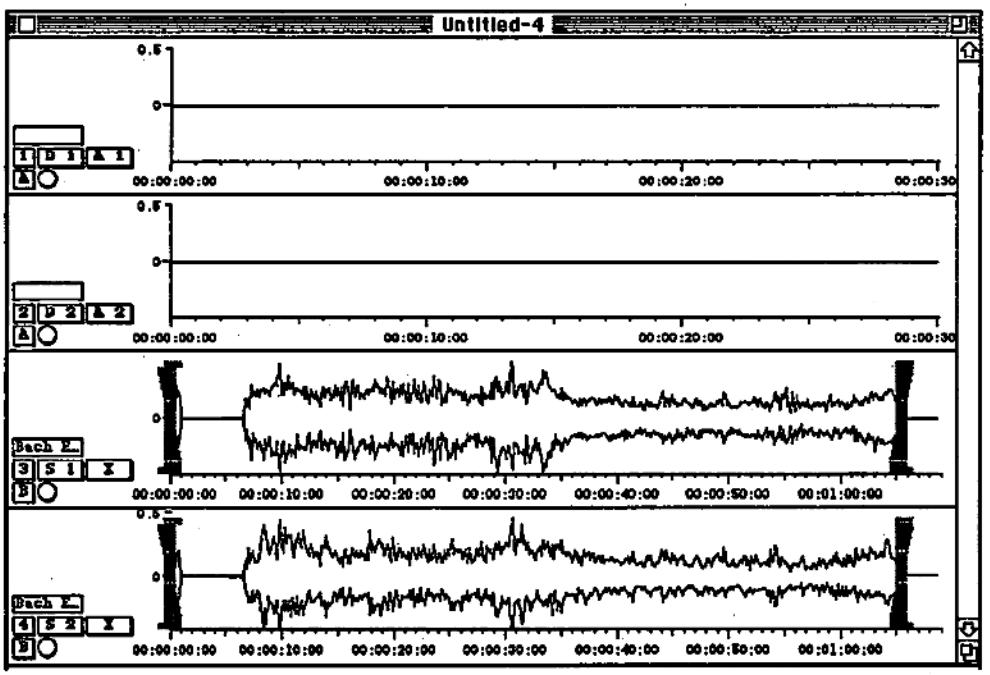


FIG. 2-15: Initially, the SonicStation opens a Sound File into the lower two panels of the display.

After the first Sound File is opened, it is not necessary to negotiate through so many Macintosh folders each time a new file is opened. The next time that **Open Sound File..** is selected, the selector dialog opens at the same point that it was left on the previous occasion. Typically, the user then navigates up to the next folder level, and selects the file to be opened.

III. Playing from the Sound Disk

At this point, the Sound File can be played from the Edit List, but the user should first check to see that the Mixing Desk and audio playback system are set properly.

Selecting the Playback Group

For playback, the user must tell the system which panels or panels are to be played. This is simply a matter of clicking on one panel or another with the mouse

- **Click on panel 3 (or use QuicKey Page Down),**

This is the first panel from the top that has sound in it.

A gray border appears around the edge of the panel (if it was not already present), indicating that this panel has been *selected*..

When a sound panel is selected, all panels in the same Edit Group are affected.

Playback

With the signal routing and playback chain set up properly, and the desired panel selected, playing audio is easy:

- **To start playback, hit the space bar on the Macintosh keyboard.**
- **Hit it once more to stop.**

Summary

The SonicStation is an extremely flexible system, and there are many ways of using it. However, all work with the SonicStation has some procedures in common, such as recording.

This chapter shows how to record sound onto the SonicStation Sound Disks and start the process of editing by opening the sound into a new Edit List..

Editing on the SonicStation always consists of the same steps.

- Record material into one or more Sound Files.
- Create a new Edit List, or opening an existing list for further work.
- Open a Sound File into the Edit List.

The next chapter describes how to start editing on the Sound File that has been opened.

Chapter 3

Basic Editing Tutorial

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Auditioning the Fade 23

Closing Edit Fade 23

III. Saving the Edit Decision List 24

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Introduction

Chapter 2 provided step-by-step instructions for recording sound onto the SonicStation's Sound Disk. A new Edit List was then created, and recorded Sound File moved into the Edit List for playback and editing.

In this chapter, you will learn the how to:

- Assemble and rearrange the sound in the Edit List in any way desired
- Open other Sound Files for use
- Play the edited sound
- Store the (modified) Edit Decision List on the Macintosh hard disk

The SonicStation is extremely flexible in its operation, and there are many, many different ways it can be used. However, the basic steps remain the same in almost any SonicStation operation.

I. Editing with Segments

A typical Sound File may have unwanted space at the beginning. With the SonicStation, there are several ways to eliminate this sort of unwanted sound.

Waveform and Text Displays

The type of display used thus far is called the Waveform display. A panel can also be displayed as a text list.

To switch a selected panel from one display format to the other:

- Pull down the **EDL** menu and click-hold on **Display Panel As.**
- Choose **Text** (⌘-T) from the pull-right menu that appears.

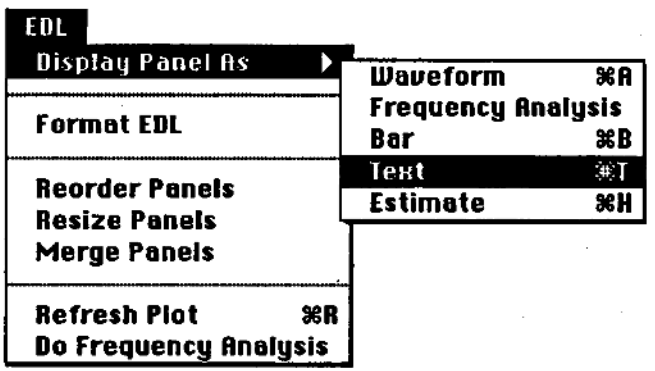

FIG. 3-1: Display Panel As in the EDL menu brings up a pull-right submenu that lets the user select the display format.

The Text command has a permanent key equivalent, ⌘-T. The command to switch back to the Waveform display is ⌘-Y. These key commands make it fast and easy to switch from one display mode to the other.

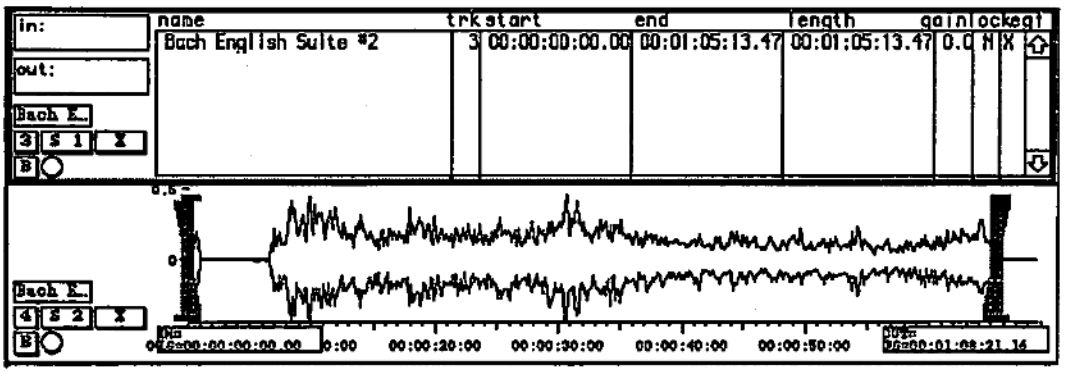

FIG. 3-2: The command Display Panel As Text (⌘-T) causes the selected panel to be displayed as a list of sound segments.

The selected panel now appears as a list of Segments, each with a name and a Start and End point displayed in hours,minutes,seconds, and frames (h:m:s:f). When a Sound File is first opened into a panel, it appears as one large Segment whose name is that of the Sound File itself. As editing proceeds, additional Segments are created, and the list becomes progressively more complex.

The display command only affects the selected panel. Other panels are not affected, even if they are in the same Edit Group. This can be very convenient when editing stereo audio because the same material can be simultaneously viewed in both formats.

- **Switch back and forth a few times between Waveform (⌘-Y) and Text (⌘-T) display formats. Become accustomed to using these keys to switch views in the Edit display.**

Marking and Moving a Segment

The process of editing with Segments consists of defining Segments by placing marks (or by performing Insert or Delete edits. See below.)

Locating an Edit Point

As with most SonicStation operations, there is more than one way to define a Segment.

- **Click the bottom panel once to select it (or use QuicKey Shift-Page down).**
- **Click-hold somewhere in the left-hand portion of the Waveform display.**

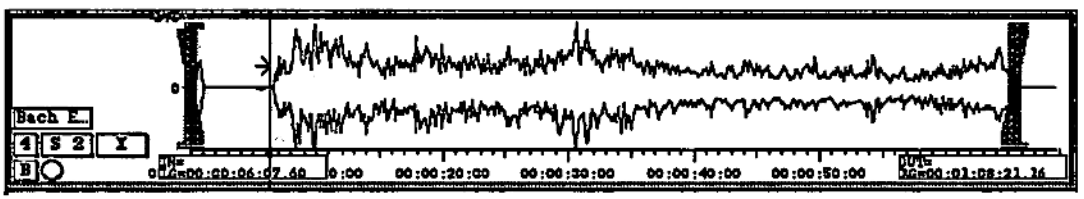

FIG. 3-3: Click-holding in the Waveform display brings up a Gate, a vertical line used to define points and areas of sound for editing.

Click-holding on a Waveform display places a Left or Right "Gate." These are vertical line markers that are used to identify precise points in the audio waveform. Click-hold in the left-hand part of the display places the Left Gate.

- **Drag the Gate to a point just before the beginning of the sound to be kept.**

To identify the beginning of the sound precisely, it is necessary to zoom in on the display so that the time scale is magnified.

- **Click-drag with the mouse, starting from the right-hand portion of the Waveform display to place the Right Gate.**

- **Place the Right Gate near the position of the Left Gate so that together they frame the area around the beginning of the sound in the Waveform display.**

The area defined by the positions of the Gates will expand to fill the entire panel.

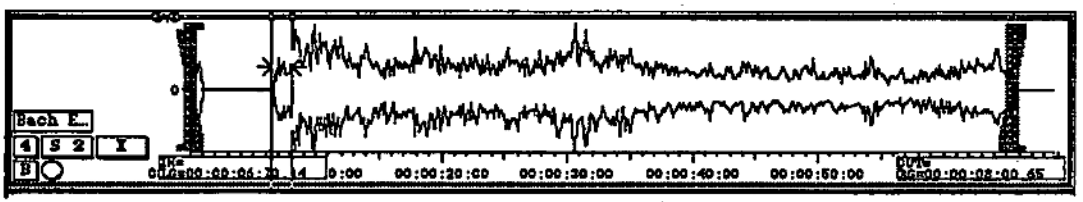

FIG. 3-4: The Left and Right Gates define an area of the waveform to be viewed at increased magnification.

A single command now will "zoom in" on the area that has been defined with the Gates.

- **Choose To Gates (or command key ⌘- G) from the Zoom menu).**

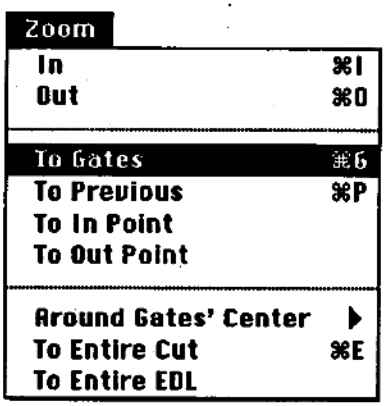

FIG. 3-5: The Zoom menu commands are used to view the Waveform display at different levels of detail.

The Waveform display changes so that the area defined by the Gates fills the whole panel.

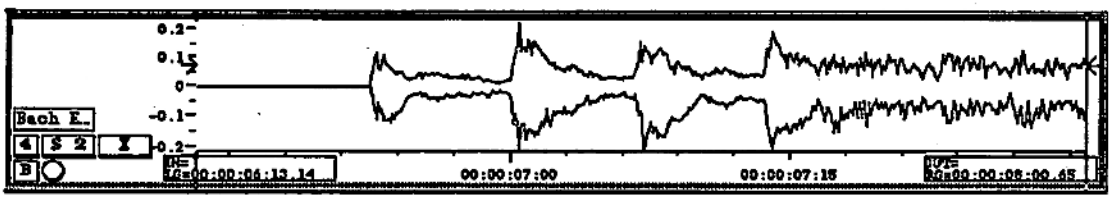

FIG. 3-6: Zooming in gives the view needed to place an edit point with precision.

- **Click-drag in the left portion of the magnified panel to place the Left Gate exactly at the beginning of audio.**

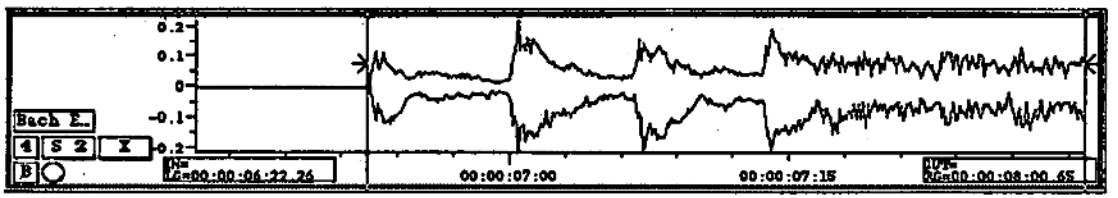

FIG. 3-7: At this level of magnification, the Left Gate can be placed at the exact point at which the music starts.

Marking the Segment

Now that the starting point of the sound has been identified precisely, a Segment Start mark can be placed at that point.

- **Click-hold on the command Mark in the Mark menu. Choose Segment Start from the pull-right menu that appears.**

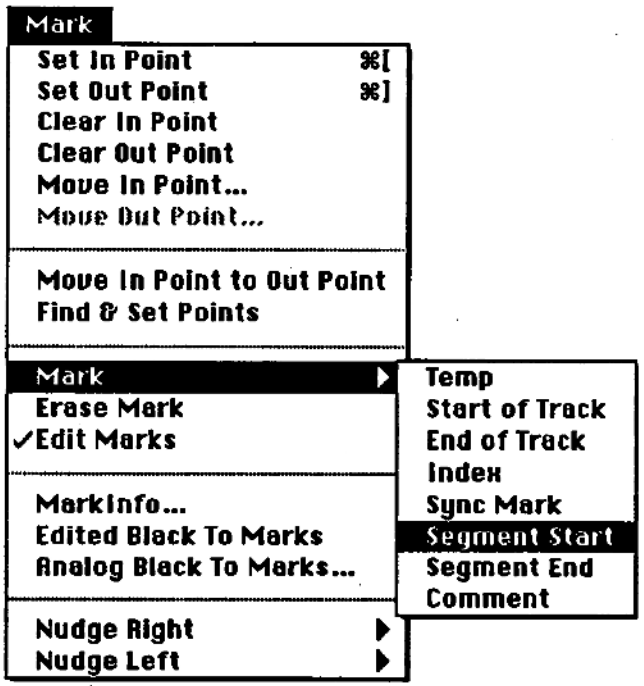

FIG. 3-8: **The Mark menu commands are used to place, move, and alter any of several different type of editing marks.**

There are a number of different types of marks used in editing with the SonicStation. The Segment Start mark defines where a "cut" is to be made to define a new Segment.

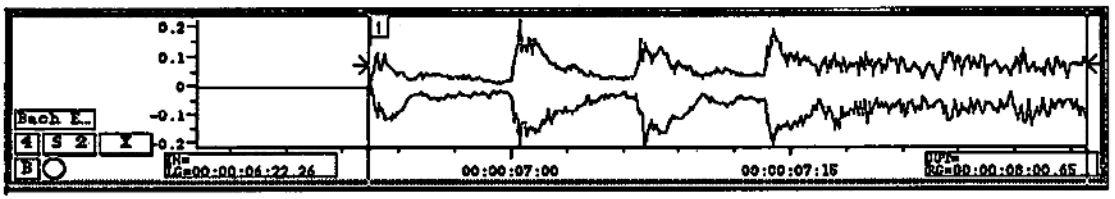

FIG. 3-9: The Segment Start Mark appears as a small, rectangular flag with a number in it.

Once the Segment Start mark is placed, zoom out again to view the entire cut.

- Choose **To Entire Cut** from the **Zoom** menu (⌘-E)

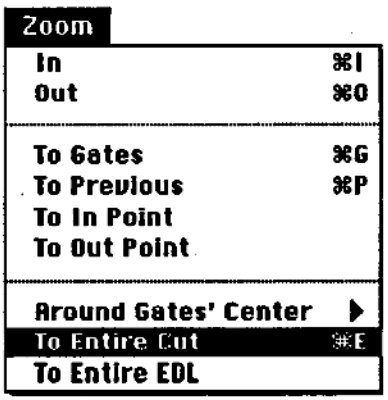

FIG. 3-10: Zoom To Entire Cut brings the Waveform display back to its original magnification level.

Now it is a simple matter to define the actual Segments for editing.

Create Segments

After marks are placed to define the Segment, it is necessary to issue a command that actually creates the Segment by "snipping" the audio at the points the marks are placed.

- **Click-hold on Create Segments in Place in the Edit menu.**
- **Choose the command of the same name from the pull-right menu that appears.**

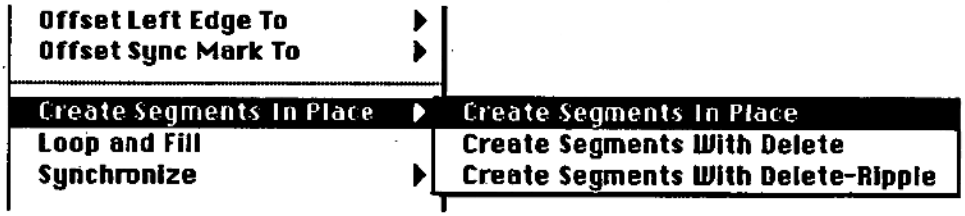

FIG. 3-11: Create Segments In Place makes a "cut" at the point of each Segment Start (or Segment End) mark.

After this command is executed, the appearance of the two Source panels changes markedly.

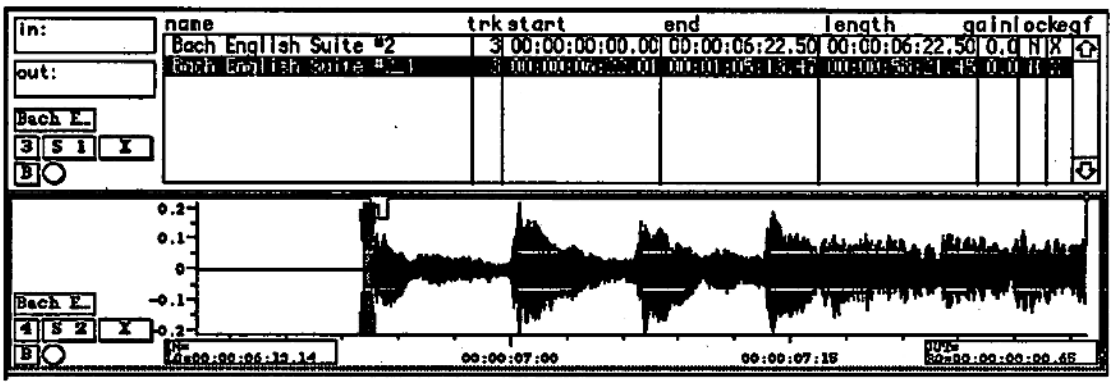

FIG. 3-12: When new Segments are created in one panel, the changes are reflected in other panels of the same Edit Group.

- A pink "bow-tie" mark appears at the point where the Segment Start mark was placed.
- The audio to the right of the mark is filled-in in blue (on a color display).
- The Text display in the panel above now contains two entries instead of one.

The original single Segment has now been divided into two. Notice that the division into Segments is reflected in the other panel, even though that panel is using a different format to display the Edit List. This ability to work in Text and Waveform mode at the same time is one of the SonicStation's most powerful features.

Moving the Segment

Once the Segment is defined, it is a simple matter to move it from one panel to another.

- **Choose Cut (⌘-X) from the Edit menu.**

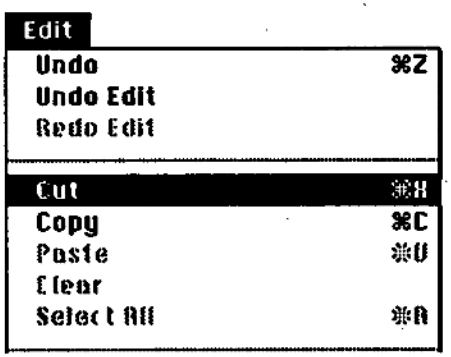

FIG. 3-13: Standard Macintosh "Cut-Copy-Paste" commands can be used to move Sound Segments from one panel to another.

When the Cut command is executed, the new Segment disappears from both sound panels.

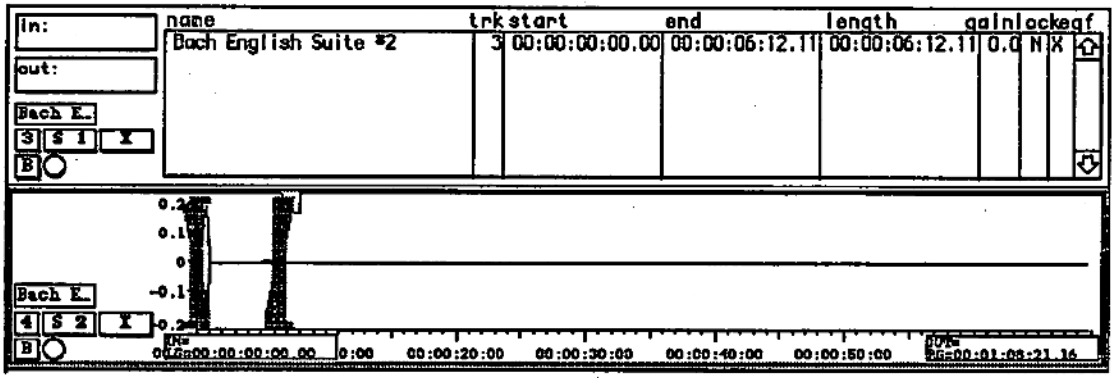

FIG. 3-14: The Cut command deletes the selected Segment from all panels in the Edit Group.

- **Click the uppermost panel (Panel 1), or use the QuicKey equivalent Page Up to select that panel**
- **Choose Paste from the Edit menu (⌘-U)**

The editing display now shows the two top panels in Waveform format. The lower two panels are still depicted in both Text and Waveform formats, and you can see that the defined Segment has been removed from those two tracks.

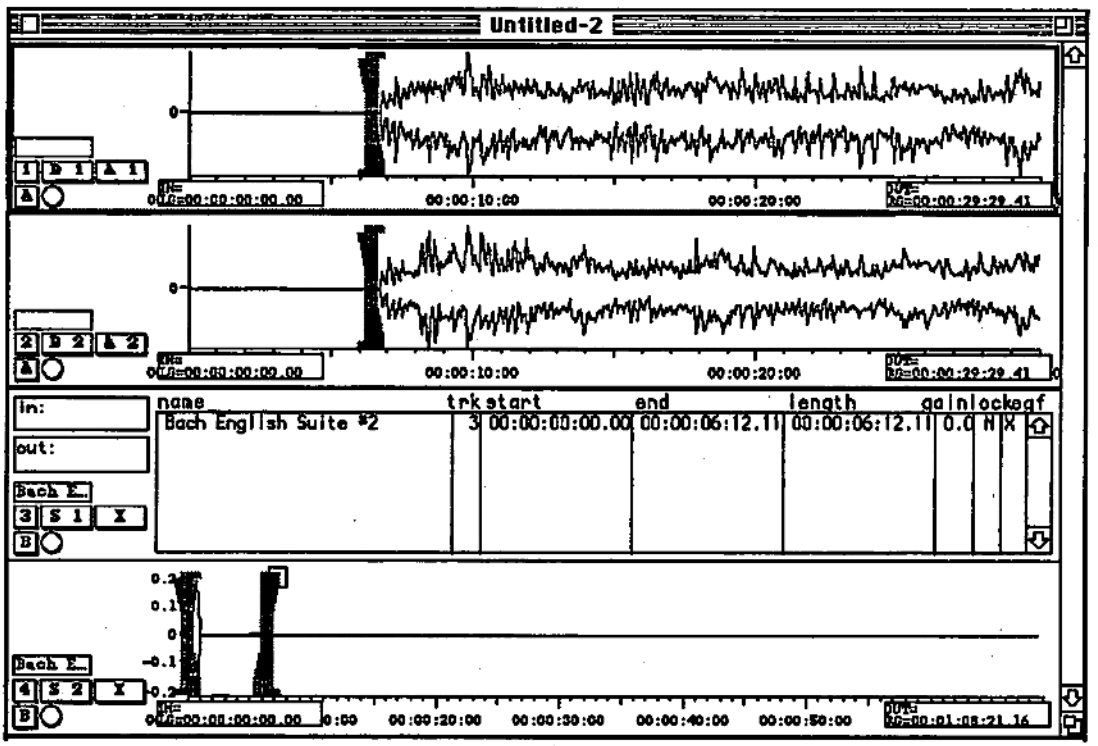

FIG. 3-15: The Sound Segment that was cut from the Source panels has been Pasted into the two Destination panels at the top of the Edit Window.

The desired audio has been moved from the two Source panels in the lower portion of the screen, into the Destination panels at the top. The initial silence and spurious audio has been left behind in the Source panels.

Notice that the Destination panels now have a different time scale than the two Source panels. This is a powerful capability of the SonicStation, but can sometimes cause confusion.

Moving the Segment to the Start of the Panel

The last thing to do is to close up the gap ahead of the Segment now residing in the Destination panels.

- **Hold down the Option key and click on the Segment. The Segment fills in with a yellow color (the color of the Destination Edit Group), showing that it has been selected.**

- **Option-click-hold on the highlighted segment in the top destination panel, and slide it to the left until the "ghost" image of the waveform extends past the left edge of the panel.**

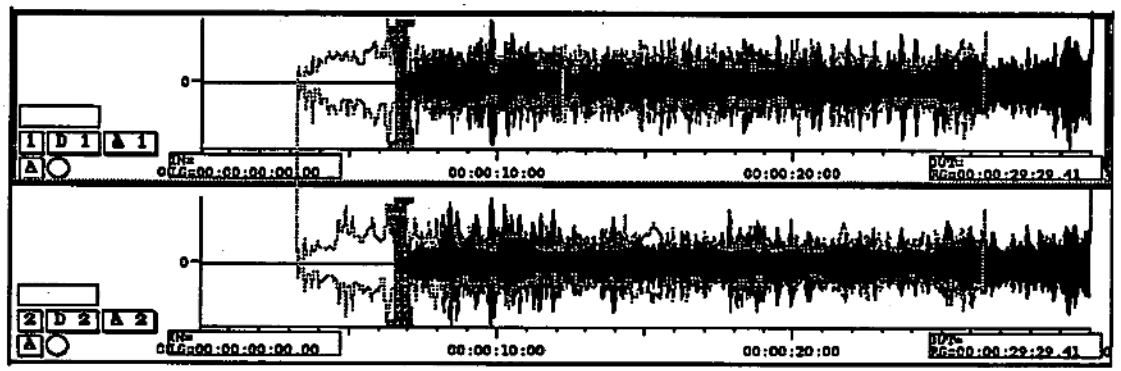

FIG. 3-16: By holding down the "Option" key and click-dragging, the selected Segment may be dragged to anywhere in the panel.

When the mouse button is released, the Segment automatically "snaps" to the left edge of the panel.

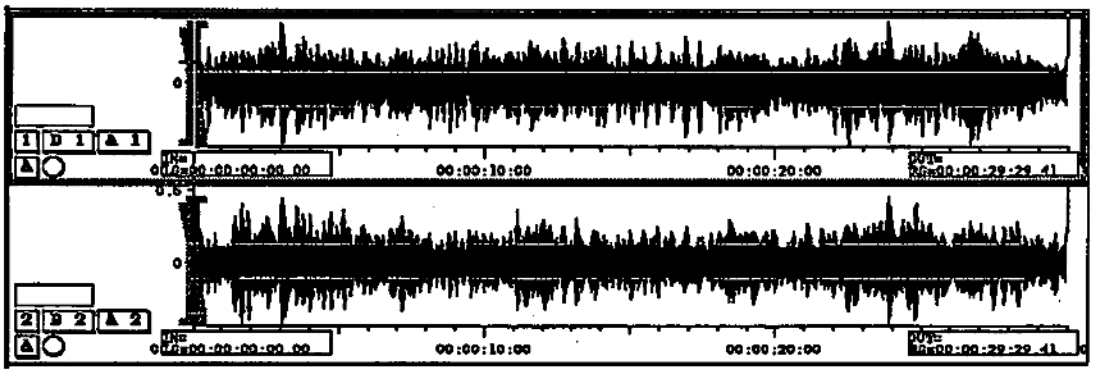

FIG. 3-17: Using "Option-drag," the audio Segment may be dragged all the way to the edge of the panel.

The first edit is complete, the garbage material at the head of the cut has been eliminated.

II. Adjusting the Fade

In the SonicStation, every audio edit has a Fade, either a Fade-in from silence, a Fade-out to silence, or a Crossfade between two different pieces of Audio.

The length of each Fade, the shape of its curve, and the exact placement of the sides of a Cross-Fade, can be controlled by the user.

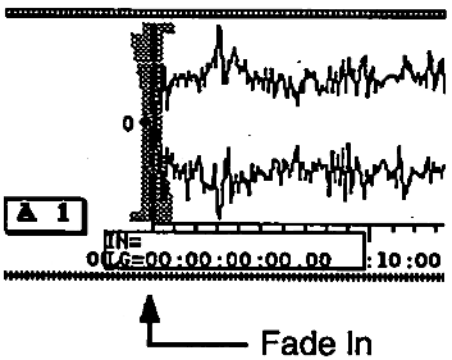

FIG. 3-18: The Sound Segment begins with a Fade-in, marked by a pink "bow-tie" shape in the edit panel.

Opening the Edit Fade Window

A special editing window is used to adjust the parameters of the fade.

- **Choose Edit Gated Fade... from the Edit menu**

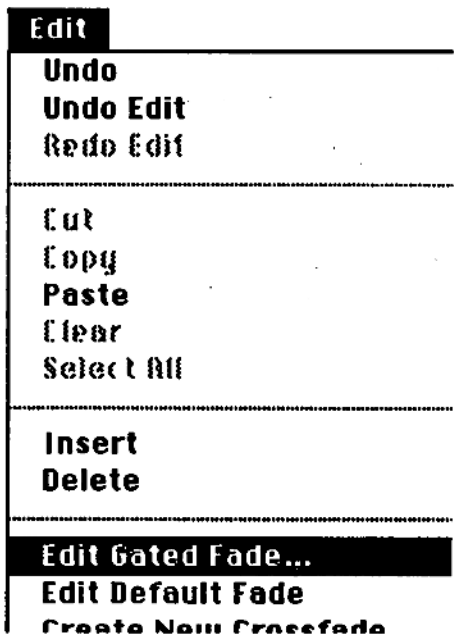

FIG. 3-19: Edit Gated Fade... refers to the fade that is enclosed by the Left and Right Gates in the Waveform display.

The term "Gated Fade" refers to the fade that is enclosed by the Left and Right Gates. Thus, any fade in an Edit List may be opened and modified.

When the fades are changed using the **Edit Fade** window, the modified fades are stored along with the Edit List, and are restored each time the Edit List is reopened.

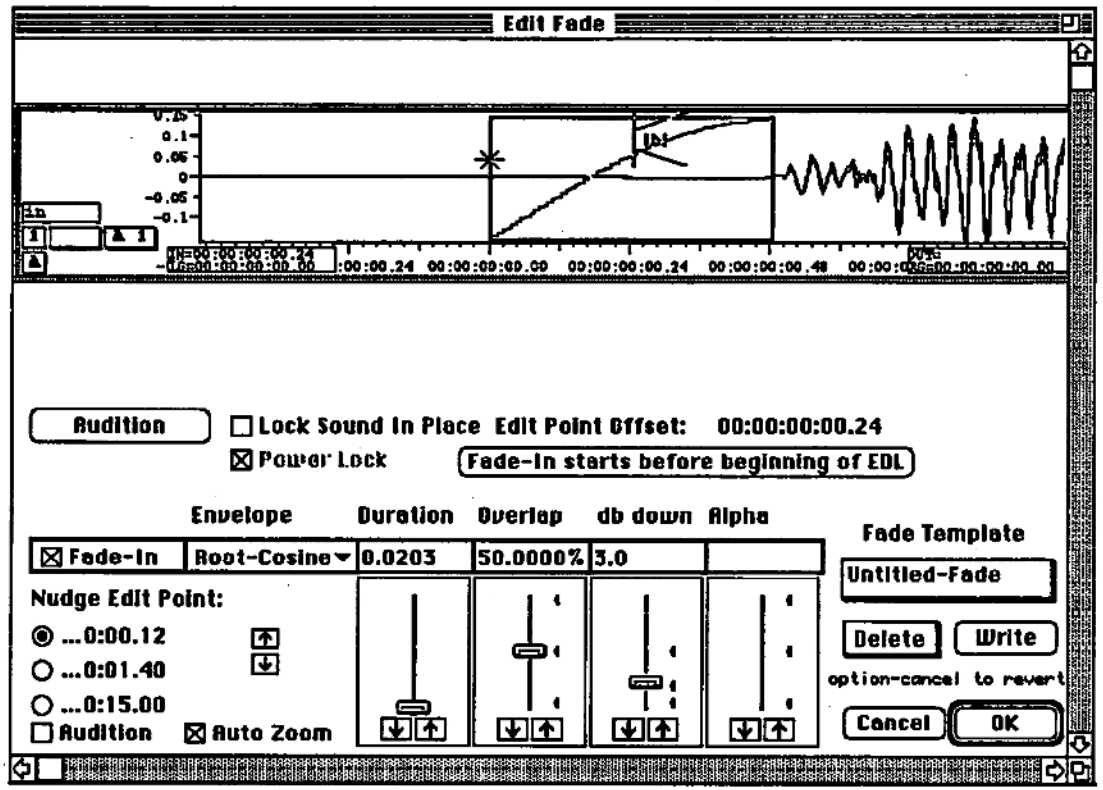

FIG. 3-20: The Edit Fade window provides complete control over the parameters of an audio edit.

The upper portion of the **Edit Fade** window is a sound panel, identical to those in the Edit Window itself. The panel shows a high-magnification view of the onset of the Sound Segment. In the case of our example, we would like to move the fade more tightly into the actual beginning of audio and increase the length of the fade.

A group of faders in the center bottom of the window control the major parameters of the fade.

- Locate the **OverLap** slider and bring it to the bottom of its travel

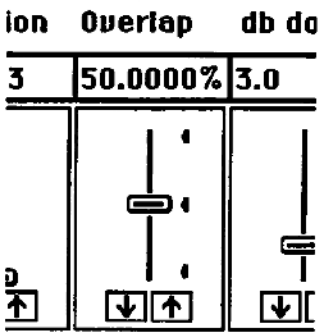

FIG. 3-21: The **Overlap** slider is one of a group at the bottom of the **Edit Fade** window.

The **Overlap** parameter shifts the beginning of the fade in relation to the Edit Point.

At 50% **Overlap**, the fade is centered on the edit, with half before the edit and half after. At 0%, the fade begins exactly at the edit.

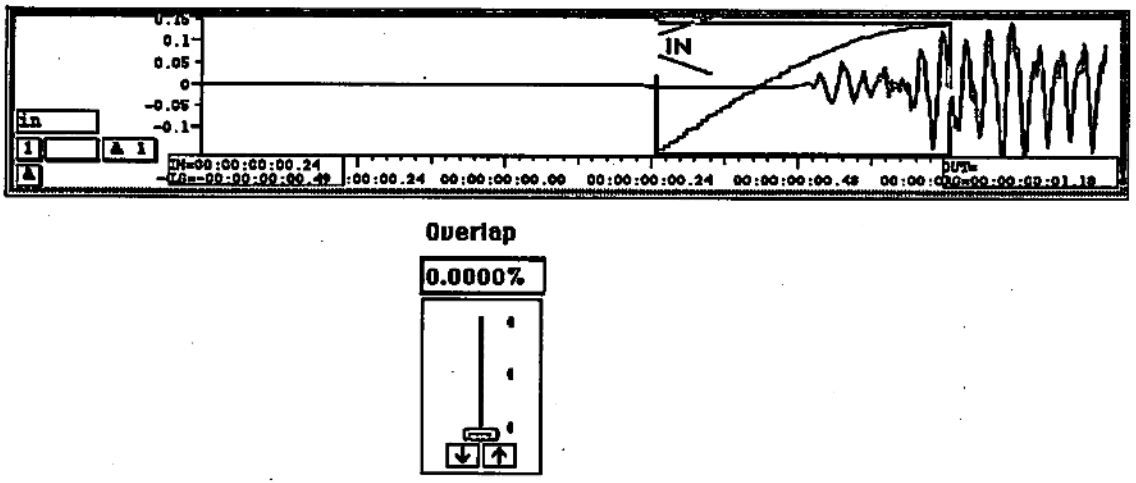

FIG. 3-22: An **Overlap** of 0.000% places the start of the fade at the exact point of the edit.

With the **Overlap** set at 0, the length of the fade can be increased as much as desired without inadvertently pushing the fade before the beginning of the Edit List.

- **Locate the Duration slider. Increase the duration of the fade up to several seconds.**

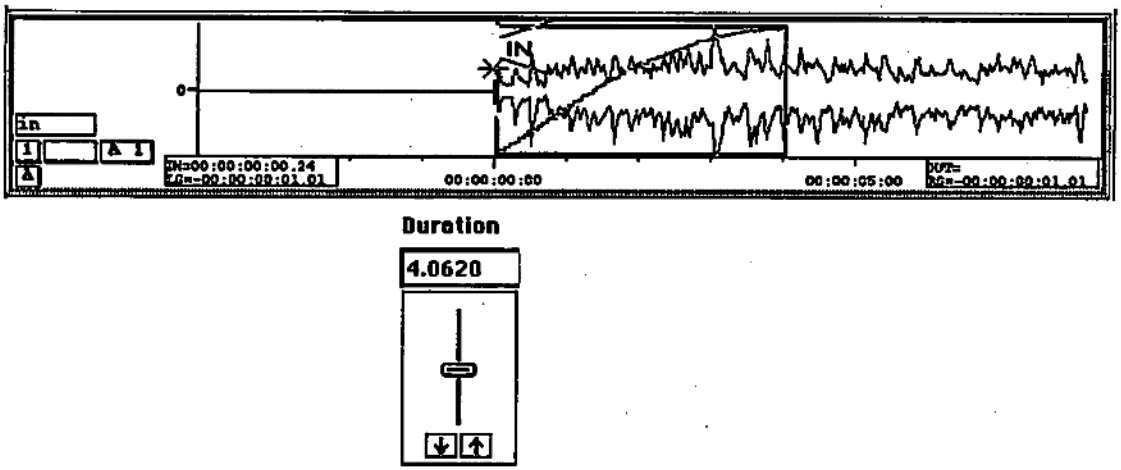

FIG. 3-23: The Waveform display rescales automatically to show the full duration of the fade.

This length of fade provides a gentle, slow swell into the music.

Auditioning the Fade

The results of modifying the fade may be heard at any time, simply by pressing the Macintosh Space Bar or by clicking the Audition button in the Edit Fade window.

- **Press the Space Bar to listen to the modified Fade-In.**

Closing Edit Fade

When changes to the fade are complete, the user may exit the Edit Fade window to return to the main edit display.

- **To close the Edit Fade window, click OK in the lower right of the window, or press Return on the keyboard.**

When the display returns, the lengthened fade is displayed clearly. Fade markers in the SonicStation's sound panels change size to reflect the actual length of the fade.

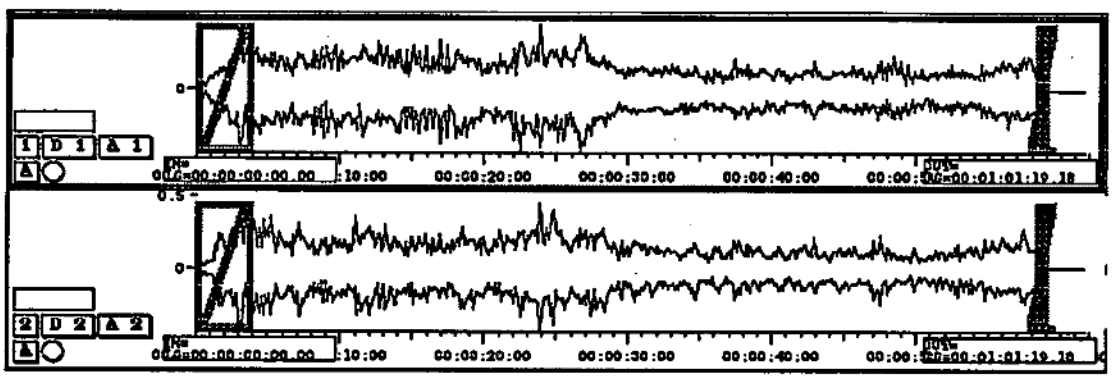

FIG. 3-24: The fade duration is indicated in the editing display by a box with a diagonal line.

III. Saving the Edit Decision List

The Edit List has been trimmed and adjusted. Before quitting the program, the Edit List should be saved to disk.

- Choose **Save** (⌘-S) from the **File** menu to store the completed Edit List

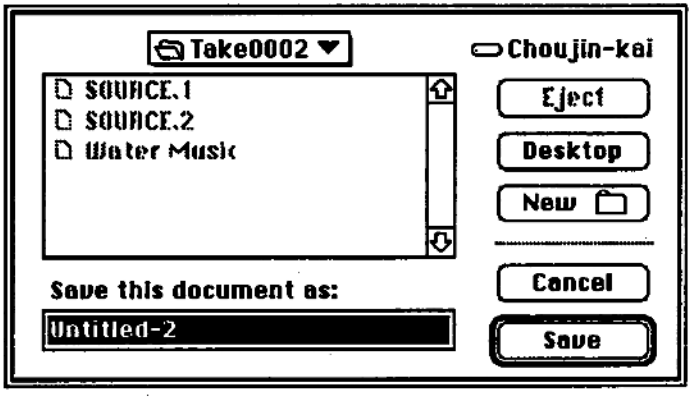

FIG. 3-25: The Macintosh File Selector is a standard dialog used to open and save files.

- In the Macintosh File Selector dialog that appears, type a name of your choise (such as "EDL.1") in the **Save this document as:** field.

- Navigate one level up to the **Recordings** folder and click **Save**

Summary

Editing on the SonicStation always consists of the same steps.

- Record material into one or more Sound Files
- Create a new Edit List, or opening an existing list for further work
- Open a Sound File into the Edit List
- Assemble material as desired.
- Open and edit with additional Sound Files, if needed.
- Save the results of editing to disk.

The SonicStation's capabilities extend far beyond the simple edit capabilities shown here. In the remainder of this manual, the user can learn how to use all the rest of the SonicStation's capabilities, including:

- Assembly editing with complete control of the transition of one sound to another.
- Multitrack editing with real-time playback with mixing and equalization.
- Background recording, so that work can proceed while new material being loaded.
- "Capture" of multitrack mixes back to the disk. The "bounced" tracks can then be opened and extended with new tracks.
- Read, write, and trigger playback to SMPTE time code.
- Archive of Edit Lists and Sound Files on digital tape.

The remainder of the manual is arranged in the manner of reference materials. The user may skip around to learn the specific topics and techniques of interest.

Chapter 4

Using The Mixing Desk

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Summary 23

Introduction

The Mixing Desk is the first screen that appears when the SonicStation software starts up. It is the center of control for signal processing.

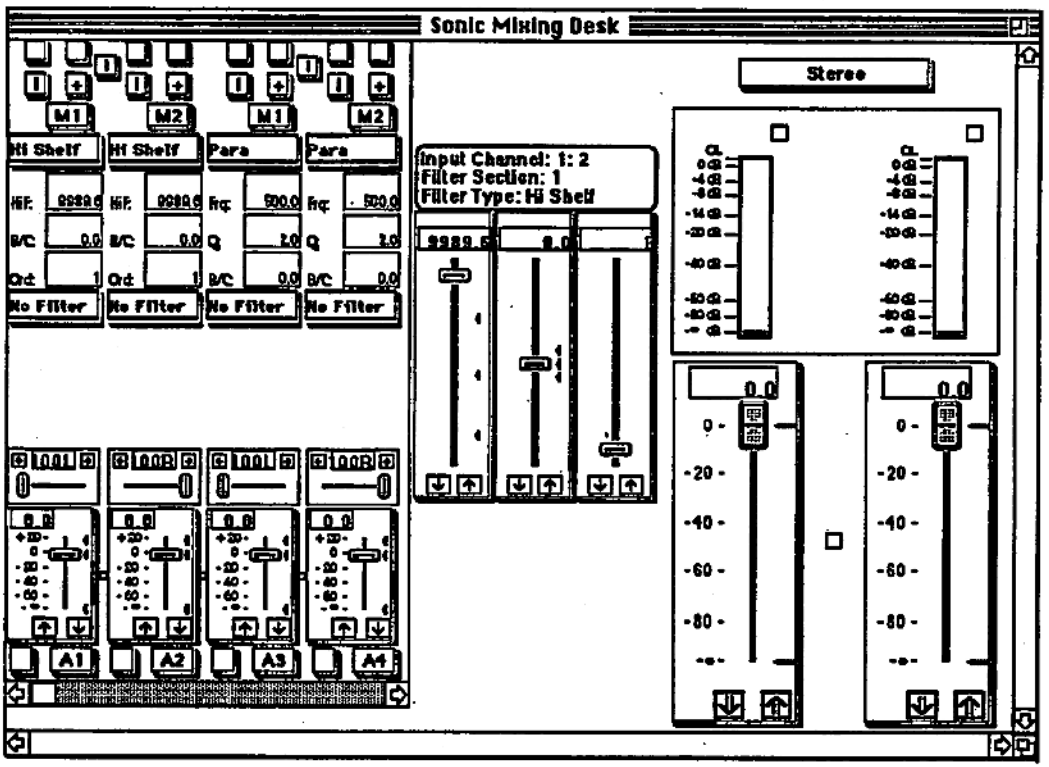

FIG. 4-1: The SonicStation Mixing Desk is divided into three sections, the Channel Fader section on the left, Filter Adjust faders in the middle, and the Output section on the right.

The Mixing Desk controls the relative levels of four input signals, regulates and monitors the output level, and equalizes audio with two selectable real-time filters per channel. A flow diagram of the Mixing Desk is found at the back of this chapter.

I. Channel Fader Section

The Mixing Desk is divided into two sections. The Channel Fader section includes four Channel Strips, each controlling the routing, level, pan, and equalization of one channel of digital audio. Equalization consists of two filter sections, independently selectable as Parametric (presence) or Shelving filter types, per strip. A strip's input is derived from the SonicStation's line inputs, playback from disk, or another channel strip (cascade).

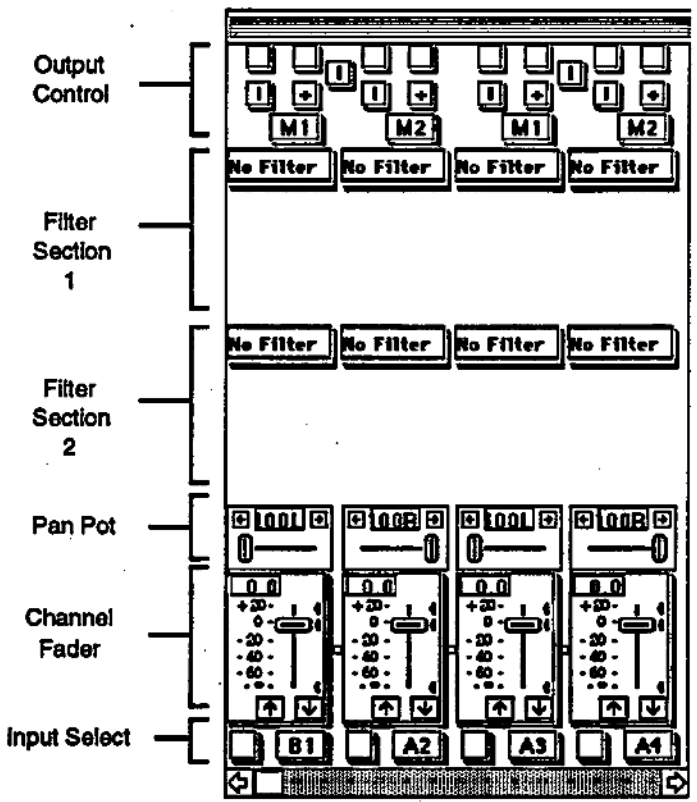

FIG. 4-2: The Channel Fader section of the Mixing Desk.

Channel Input Select and Insert Points

Each Channel Strip accepts input from a selection of internal and external signals listed in a pop-up menu brought up by the Channel Input Select button.

(In the case of playback channels from the Sound Disk, two separate signals may be assigned to the same Audition Channel, as described in Chapters 6 and 11. This is how the four channels of the Mixing Desk are used to playback up to eight tracks of audio.)

One insert point is provided in each channel strip to accommodate DSP options such as NoNoise sonic restoration. This insert point is not functional in the basic SonicStation.

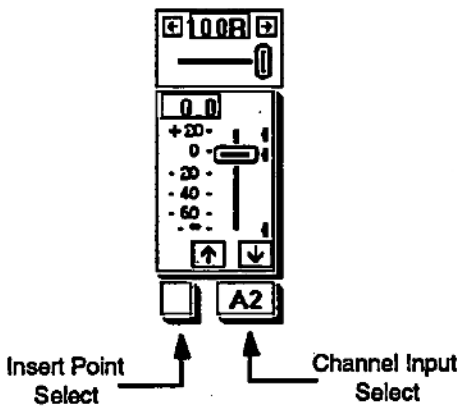

FIG. 4-3: A Channel Input and Insert Point Select button is located at the base of each channel strip.

A two-character label indicates the present state of the Input Select button, while the Insert Point button remains blank until an insert point is selected.

Clicking and holding on the Channel Input Select button brings up a long list of selections for inputs to the Channel Strip. Most of these options are not available in the basic system, but can be used with the Expanded SonicStation, which may be equipped with various DSP options.

L1 - Left Input
L2 - Right Input
L3/OFF - Left Input Alt
L4/OFF - Right Input Alt
C1/OFF - Slice 3 output
C2/OFF - Slice 4 output
A1 - Audition Left
A2 - Audition Right
✓A3 - Audition Left Alt
A4 - Audition Right Alt
B1 - RollOff Left
B2 - RollOff Right
B3 - RollOff Left Alt
B4 - RollOff Right Alt
F1 - Efx Rtn Left
F2 - Efx Rtn Right
F3 - Efx Rtn Alt Left
F4 - Efx Rtn Alt Right

FIG. 4-4: The Channel Input Select button brings up a menu of sources.

Only the line inputs (L1 and L2), disk channels (A1-4), and the two cascade channels (C1 and C2) are active in the SonicStation. The other inputs apply to the Expanded SonicStation and add-on options such as NoNoise.

L1-L2 Line Inputs

These are the audio inputs into the SonicStation. There are four line input selections in the menu, even though the SonicStation has only two audio inputs. The remaining two selections, L3 and L4, are used in the Expanded SonicStation only.

C1/C2 Channel Cascade Inputs

Channels 3 and 4 can be cascaded into Channels 1 and 2 to provide increased signal-processing capability. In this case, the desired input signals are selected for Channels 3 and 4, and Channels 3 and 4 outputs are switched off.

A1-A4 Audition (Disk) channels

The SonicStation has four Audition busses coming from the Sound Disk. For mixdown, these can all be routed to the Mixing Desk's channel strips. Note that more than one Panel can be assigned to each Audition channel. On playback, the SonicStation will play correctly, so long as no more than two active signals are presented to each Audition channel at one moment. The user thus has 8 continuous tracks of audio and unlimited virtual tracks.

Insert Points

The Insert Point Select button to the left of each Channel Input Select button is used to insert signal processing options, such as effects and NoNoise, in line with the channel. The Insert Point Select button calls up a pop-up menu listing four insert points (I1-I4), and the default setting (X-No insert).

The Channel Insert Points are not functional in the basic SonicStation. They may be used with the Expanded SonicStation equipped with DSP options such as NoNoise sonic restoration processing and TimeTwist time compression/expansion.

Filter Group

The Mixing Desk provides up to eight filters sections, two for each channel strip. Cascading strips allows up to four sections on a channel.

FIG. 4-5: The Filter Select buttons bring up a pop-up menu of filter types.

When the user clicks on the box representing the filter section, a pop-up menu of filter types appears. There are three basic filter types:

- **Parametric**
- **Hi Shelf** (High Frequency Shelving)
- **Lo shelf** (Low Frequency Shelving)

Alternatively, a filter can be switched off (**No Filter**) or set to follow the setting of the filter to its immediate left or right (**grabRight** and **grabLeft**).

The selected filter type is displayed in the Filter Select button, and the parameters of that filter appear in a group of boxes underneath.

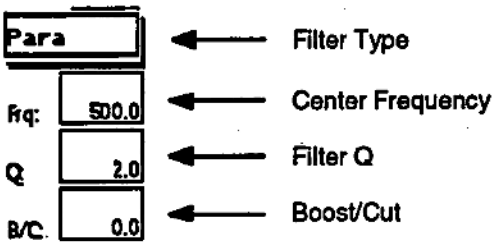

FIG. 4-6: Filter parameters are displayed beneath the Filter Select box.

Each parameter is listed along with the current values in appropriate units. The selection of parameters changes with the type of filter selected. The center or cutoff frequency is always displayed as the first parameter.

The parameter boxes found below the Filter Select boxes are used to display parameters only. In order to change the parameters of the filter curve, it is necessary to use the graphic sliders that appear in the middle section of the Mixing Desk display when one of the active filter sections is selected by clicking it with the mouse.

When one of the active filter sections is selected, the parameters of that filter are shown as a group of slider controls appearing in the Graphic Filter Editing area located between the Channel Fader and Master Output sections of the Desk.

These sliders allow filter values to be adjusted conveniently and with precision.

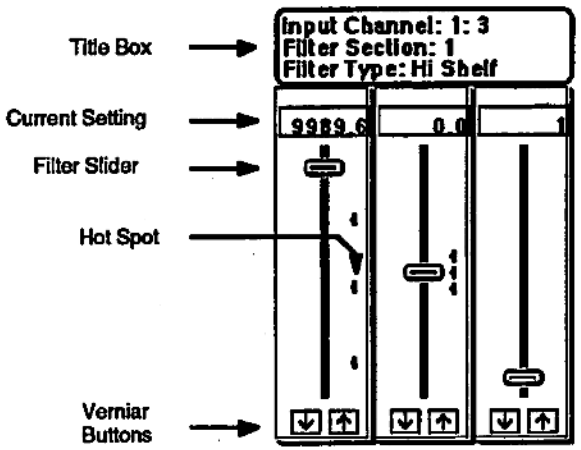

FIG. 4-7: The Graphic Filter Editing area is an alternative method of adjusting filter parameters.

The left-most slider represents the uppermost parameter in the display boxes in the channel strip. The "Hot Spot" next to the sliders can be used to set that parameter instantly to one or more commonly used values.

If more than one filter has been selected on the Mixing Desk, the Graphic Filter Editing area always shows the last filter section clicked.

Pan & Level Control

The group of vertical and horizontal faders at the bottom of the Mixing Desk screen provide control of individual channel level and pan.

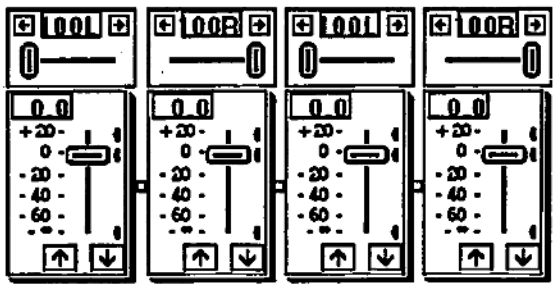

FIG. 4-8: The Channel Faders and Pan Pots.

Pan Pot

Each Channel Strip has a Pan Pot that controls the routing of signal between the two output busses, M1 and M2.

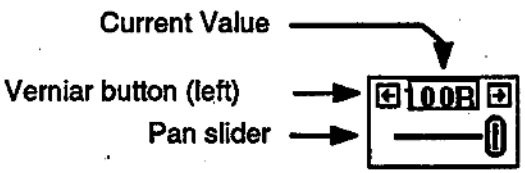

FIG. 4-9: The pan pot adjusts the left/right balance when the channel is set for stereo output.

The display shows the current value as the Pan Pot slider is dragged or the nudge buttons on either side of the display clicked (which steps the panning by small amounts). A value of 100R represents full right, while 100L is full left. Dead center is value "0."

Channel Fader

The channel fader sets the amount of gain or attenuation applied to the post-EQ signal. It is capable of supplying up to +20 dB of gain, or attenuation down to infinity.

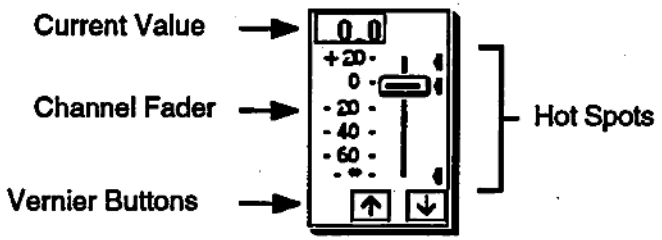

FIG. 4-10: A Channel Fader.

The readout window at the top displays gain in decibels as the slider is adjusted. "Hot spots" to the right of the slider can be used to quickly set the gain to unity, +20 dB, or infinite attenuation. The nudge buttons at the bottom of the slider move the gain in small increments.

Long Faders

Fader resolution can be increased by selecting "Long Faders" from the Desk menu. This sets the response of the faders such that a large motion of the mouse yields a much smaller motion of the onscreen fader. With this item active, a full-screen mouse motion moves the fader from top to bottom.

Channel Lock

Channel strips can be "ganged" for convenience in mixing stereo signals. With the Channel Lock box (located between Channel Faders 1 & 2 and 3 & 4) checked, moving either fader causes the other fader to move as well. If the two faders are set for different amounts of gain at the time the Channel Lock box is selected, the gain difference between the two channels is preserved.

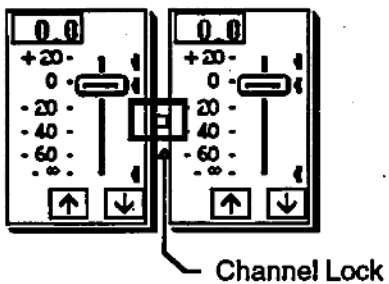

FIG. 4-11: The Channel Lock box gangs two faders together to control a stereo signal with a single motion.

Output Control Group

Each channel strip has a group of buttons that select output routing, phase inversion, solo, mute, and EQ in/out

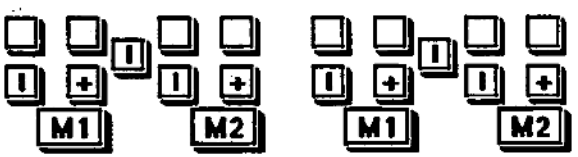

FIG. 4-12: The Output control buttons.

The Solo, Mute, EQ Bypass, and Phase Invert buttons have a "toggle" action. That is, they change state each time they are clicked with the mouse.

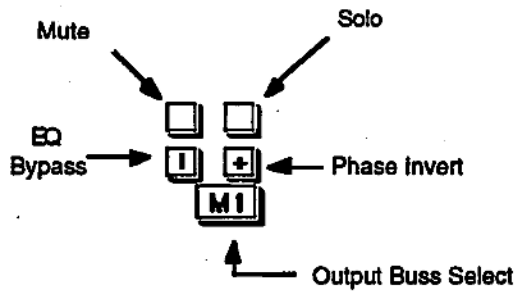

FIG. 4-13: Output Controls affect Muting, Solo, Invert, and EQ Bypass.

Solo

The Solo button selects a single strip for output or auditioning by muting the other channels. When activated, a letter "S" appears inside the button. Clicking the Solo button on a muted channel unmutes it.

Mute

The Mute button turns off the output of the affected channel. If Solo is active when Mute is selected, the solo is turned off.

EQ Bypass

EQ Bypass switches all filters in the channel strip in or out. With the filters out, that channel has a completely flat frequency response.

Phase Invert

The Phase Invert button directly inverts audio polarity on the affected channel, alternately switching between uninverted (positive phase) and inverted (negative phase).

Output Bus Select

This button has a pop-up menu which routes the channel strip to one of four output busses. The "X" selection means no assignment for that channel. Only busses M1 and M2 are active on the SonicStation. Busses M3 and M4 are used in the 4-channel Expanded SonicStation.

Stereo EQ Bypass

Each channel has an EQ Bypass. A Stereo EQ Bypass button located between channels 1-2 and 3-4 lets the user switch EQ in and out on a stereo pair.

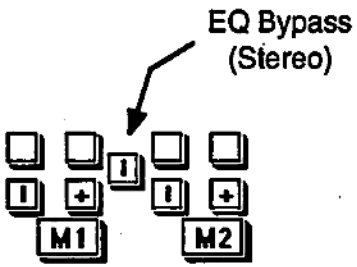

FIG. 4-14: Equalization may be switched in and out on two channels at once, using the EQ Bypass button.

II. Output Section

The right hand section of the Mixing Desk controls output. It consists of a single button to select Stereo or one of three possible Mono configurations, two meters to indicate signal level, and two master faders that regulate output level.

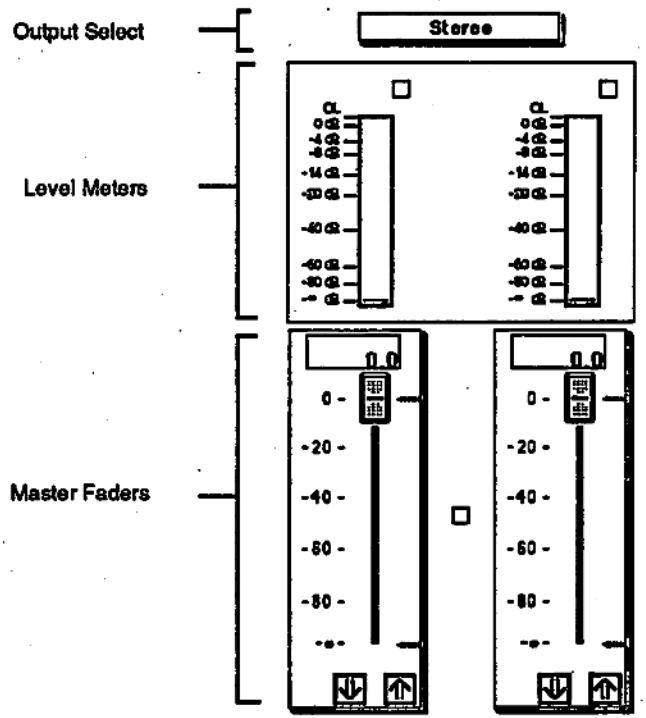

FIG. 4-15: The Output section of the Mixing Desk includes the Level Meters and Master Faders

Output Bus Select

The Output Bus Control button determines whether the SonicStation functions as a stereo or monaural system. A pop-up menu displays the possible configurations.

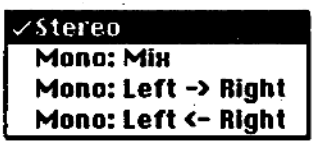

FIG. 4-16: The Output Bus Control pop-up menu, showing output configurations for the SonicStation

Stereo

If Stereo is selected, the Pan Pots are active, and the signals from the left and right busses are routed to the left and right outputs from the SSP-3 card.

Mono (Mix)

In the Mono (Mix) setting, the two sides of the stereo mix are combined. Both outputs, left and right, see the same signal.

Mono (L->R)

The left side of the stereo mix is routed to the right side as well, yielding a mono output.

Mono (L<-R)

The mix for the right side, as set by the Channel Faders and Pan Pots, is routed to the left output as well.

Output Level Meters

The Meters section provides visual confirmation of audio signal levels output from the Mixing Desk. By selectively routing signals through the Desk, the meters can be used to read the level of signal anywhere in the system.

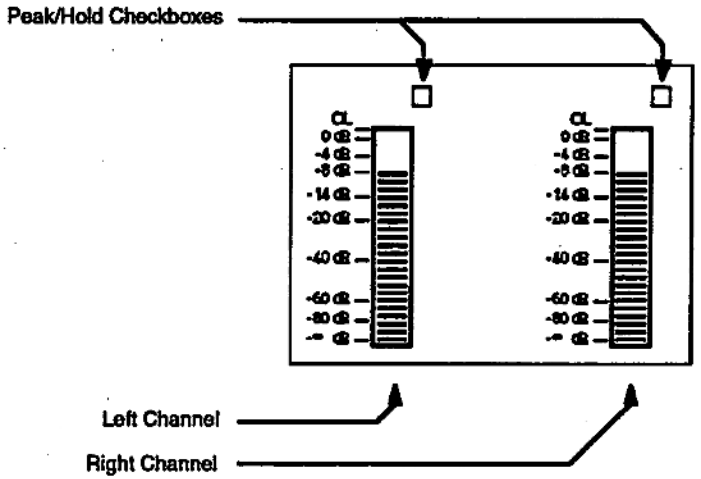

FIG. 4-17: The SonicStation output level meters display the left and right channel, with an option for Peak/Hold operation.

Peak/Hold Checkbox

The meters show instantaneous and peaking (3 second maximum valuses in bright and light green, respectively. **Peak Hold** means that the peak hold time is infinite.

Left and Right Meters

Each meter provides a reading of the full scale of digital audio, from minus infinity to 0 dB, where 0 is one bit-value less than full scale. The overload indicator on each meter lights if the signal actually reaches full scale.

Master Faders

The Master Faders provide signal attenuation only, from 0 dB of attenuation down to infinity.

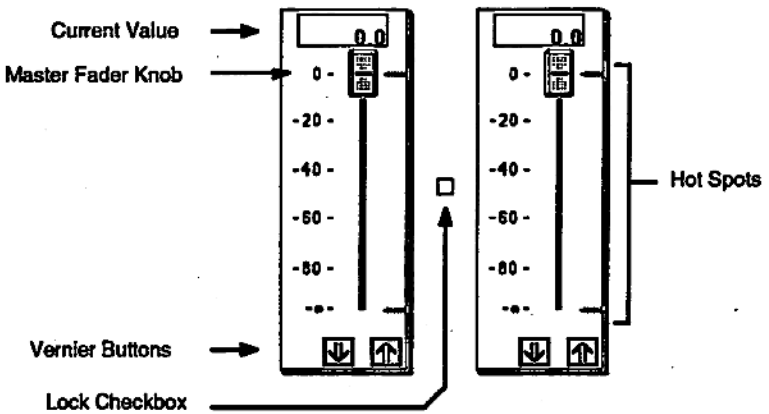

FIG. 4-18: The Master Output Faders, showing Channel Lock checkbox, slider, and nudge buttons.

The readout box at the top indicates the actual level of attenuation as the sliders are adjusted. "Hot Spots" to the right of the slider quickly set level to "0" (off) or full scale, and nudge buttons at the bottom change attenuation in small increments.

The Master Output Faders may be locked together for stereo fading in the same fashion that pairs of Channel Faders are locked: by clicking the Channel Lock check box between the faders.

III. Filter Types and Parameters

The SonicStation Mixing Desk provides three types of high-resolution digital filters that fall into two categories. Each filter type has individually adjustable parameters that are displayed in the parameter box underneath the Filter Select button.

When the user clicks one of the filter sections with the mouse, the parameters of that filter are shown on the Filter Adjust sliders that appear in the middle section of the Desk.

Parametric (Presence) Filter

The parametric (presence) filter boosts or attenuates a particular region of the audio spectrum.

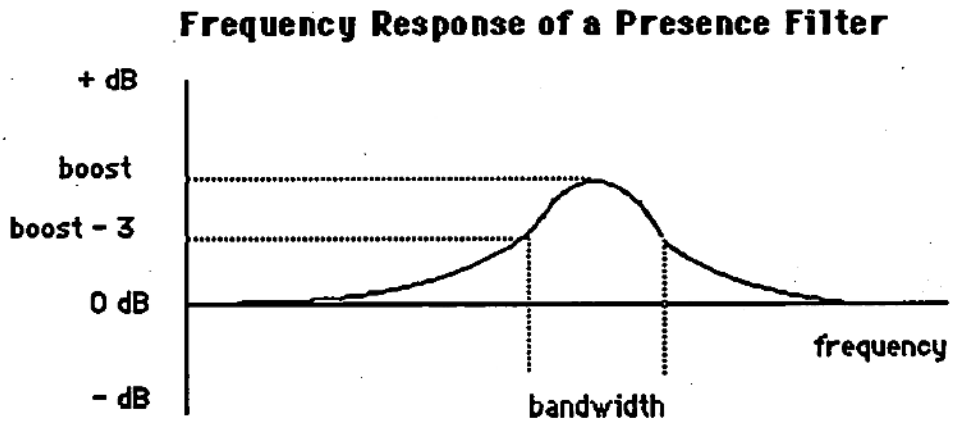

FIG. 4-19: A Parametric, or "Presence" filter applies a defined boost or cut to a specified frequency area.

There are three parameters that define the response of the Parametric filter type:

Center Frequency (Frq)

The Center Frequency is the mid-point of the band affected. The Parametric filter's center frequency may be selected over a range of 1.0 Hz to 22.050 kHz

Bandwidth (Q)

Filter Q may be translated into actual bandwidth in Hertz using the formula BW = Freq/Q. The SonicStation's Parametric filter supports Q settings from 0.1 to 100.

Bandwidth is defined in terms of ±3 dB of boost or cut or 1/2 the specified boost or cut, whichever is less. Thus, if the boost you specify is 4 dB, bandwidth is the distance between the points at which +2dB of boost is applied, above and below the center frequency.

Boost/Cut (B/C)

B/C indicates the amount of gain or attenuation that will be applied at the Center Frequency. The Parametric filter is capable of supplying boost or cut of up to ±24 dB.

High and Low Shelving Filters

Shelving filters apply a fixed amount of boost or cut to all frequencies above the cutoff frequency.

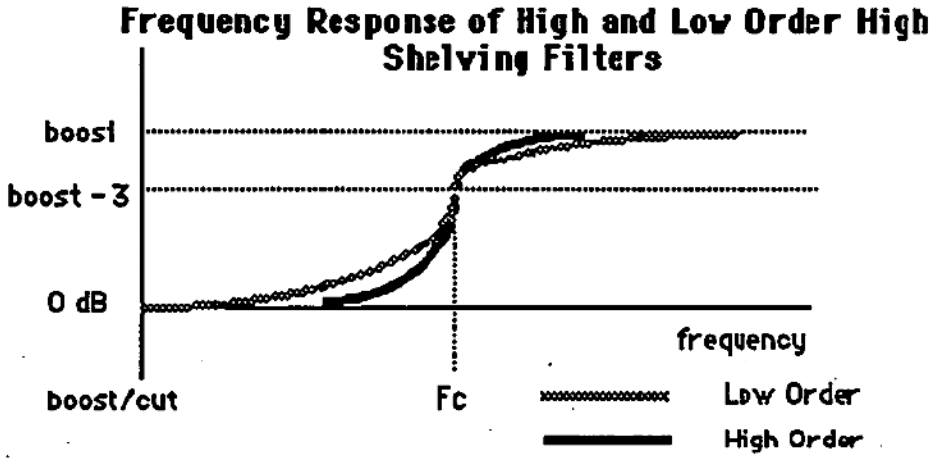

FIG. 4-20: The Shelving Filters (both Hi and Low) apply a fixed boost or cut to the region above or below the cutoff frequency

The Hi Shelf and Lo Shelf filters also have three variable parameters, but they are different from the ones that apply to the Paramtric filter.

Cutoff Frequency (HiF or LoF)

Cutoff Frequency in the Shelving filters is the point where the affected signal is boosted or cut by 3 dB, or by 1/2 the specif boost/cut, whichever is les. The HiShelf and LoShelf filters have a range of 1 Hz to 22.050 kHz for the cutoff frequency.

Boost/Cut (B/C)

Boost or Cut applies to signal above (in the case of HiShelf) or below (in the case of LoShelf) the cutoff frequency. The range of boost or cut is ±24 dB.

Sharpness (Ord.)

The "Order" of a filter controls the slope of the filter's response curve. This is an integer value from 1 to 4. The slope is expressed in dB per octave (doubling of frequency). The first-order filter has a slope of 6 dB per octave. The slope increases by 6 dB per octave for each increment of 1 to the filter's oders.

Higher values of Order consume larger amounts of the SonicStation's signal-processing power. If high values are selected for multiple filter sections, the DSP engine may not be able to deliver the full performance requested.

Summary

The SonicStation Mixing Desk is a fully digital mixing console that provides comprehensive control of signal level and equalization in the SonicStation. Besides mixing signal internal to the SonicStation, the Mixing Desk can be used as a real-time digital equalizer by selecting Line 1 and Line 2 as inputs to the Desk.

Each of the Mixing Desk's four Channel Strips provides full control of level and pan, with up to 6 dB of boost. Each strip is equipped with two digital filter sections that may be selected as Parametric (Presence) or High or Low Shelving filter types. The filter sections may be adjusted individually, and Channel Strips may be cascaded to provide up to four filter sections on a single channel.

The inputs to the Channel Strips can sum up to two channels of playback from the Sound Disk, so that the Desk may be used to combine up to eight playback channels. Each Channel Strip also has Mute, Solo, and EQ Bypass, and all channel controls may be locked to those of other channels for stereo.

The Mixing Desk Output Section provides stereo metering and two gangable Master Faders.

Chapter 5

Recording and Organizing Sound

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Introduction

The SonicStation provides tremendous flexibility in recording and playing sound. Chapter 2 showed how easy it is to record sound onto the SonicStation and how to open the resulting Sound Files into an Edit List for editing and playback.

This chapter provides detailed information on the commands and dialogs that control recording. The first part of the chapter provides background information on the SonicStation's Transport Panel and entering time values.

The second part of the chapter provides details on recording, and the many options provided by the **Record Sound File** and **Record Preferences** dialogs.

The third part of this chapter describes how to use the **Sound File** and **Sound Disk Managers** to examine the contents and state of the disks, to purge unneeded files, and maintain the file system on the Sound Disk.

I. The Transport Panel

Recording and playback can be initiated by menu commands, key equivalents (such as pressing the Space Bar to play) or by using the **Transport Panel**. This is a "floating" panel that remains at the front of the Macintosh screen as other windows are opened and closed. Once the Transport Panel has been opened, it remains visible at all times until explicitly closed by the user.

The Transport Panel is called up by selecting **Transport Panel** from the **File** menu. It also appears in response to the menu commands **New Sound File** or **Record Sound File**. The Transport Panel resembles the controls of a mechanical tape transport in look and operation, but with much greater flexibility.

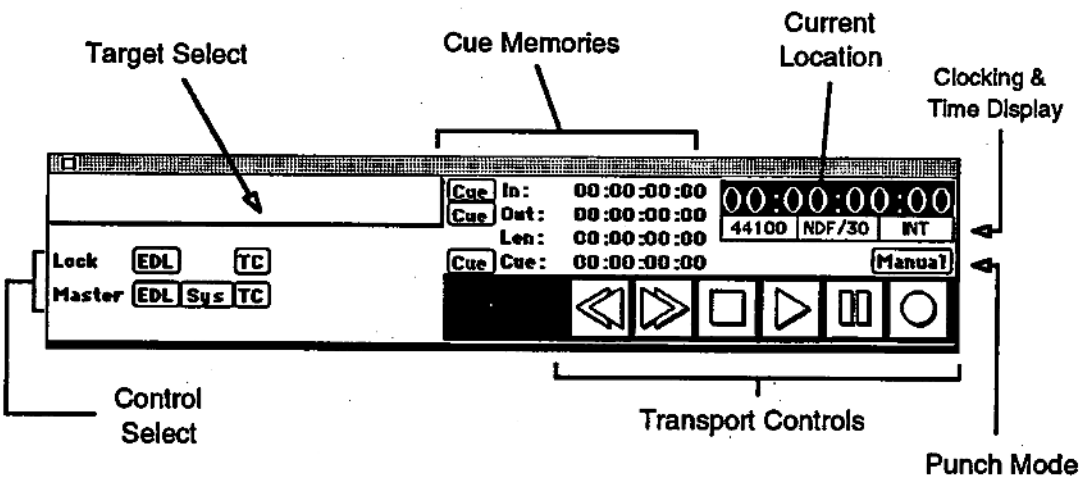


FIG. 5-1: The Transport Panel provides comprehensive control of recording and playback.

The Transport Panel's functions are divided into six blocks.

Transport Controls

Of the different sections of the Transport Panel, the most important is the Transport Control block.

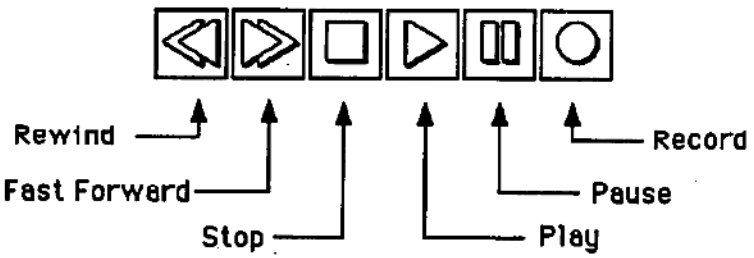


FIG. 5-2: The SonicStation Transport Controls are modeled after those on conventional tape transports.

The key buttons are **Play, Stop, Pause** and **Record.**

- **Play** starts playback from the time indicated in the Current Location window.
- **Stop** terminates playback.
- **Pause** is used during recording, to initiate and to interrupt recording while inserting markers in the recorded file.
- **Record** arms the system for recording. When clicked, it brings up the **Record Sound File** dialog.

Record is automatically set when the Transport Panel is called by **New Sound File** or **Record Sound File.**

The **Fast Forward** and **Rewind** buttons are used only in the Expanded SonicStation to control external transports. The SonicStation provides instant access to any point without the need to shuttle tape to a new location.

Current Location Counter

During playback or recording, the Current Location window displays the running time. When stopped, it indicates the time from which the Play button will start playback.

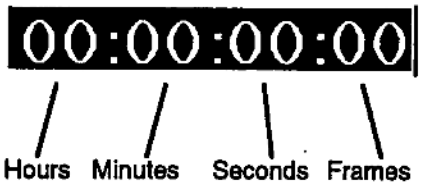


FIG. 5-3: The Transport Panel's Current Location window indicates running play time . Time is displayed in the format of the selected Edit List.

> The SonicStation can display time in many different formats. In playback, the display format for Current Location (and Cue Memories) follows that of the Edit List. During recording, the time display format is determined by the selection in the Time Display section of the Transport Panel. If time code is used during recording, the time display follows the format of incoming code.

Target Select Window

The Target Select window in the Transport Panel's upper left corner lists the name of the Edit List currently controlled.

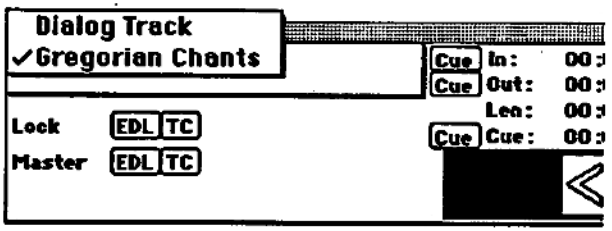


FIG. 5-4: The Target Select window provides a list of all Edit Lists that are currently open.

If only one List is open, that one is controlled by default. If more than one list is open, the system picks the Edit List that has been selected most recently as the *active list* . Any currently open Edit List may be selected by click-holding on the Target Select box and selecting from the list that appears.

> **NOTE:** In the Expanded SonicStation, the Target Select box includes external transports controlled by serial machine control ports.

Cue Memories

The SonicStation Transport Panel provides three Cue Memories to store time points for instant recall.

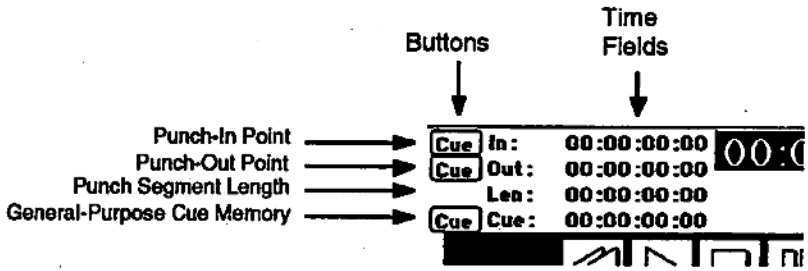


FIG. 5-5: The Transport Panel provides three Cue Memories. Two of these can be used for automatic punch-in and punch-out.

To store a time value in one of the Cue Memories:

- **Select one of the Cue time fields.**
- **Type or drag to enter the desired value.**

OR **Cut and paste a time from another window.**

OR **Press the Space Bar to "grab" the current time from the Current Location window.**

To locate to a Cue Memory:

- **Click the button to the left of one of the Cue memory time fields.**

The Current Location window jumps immediately to the new location. If a Cue Memory is selected while playing an Edit List, the List continues to play from the Cue point.

The **In:** and **Out:** Cue Memories control the location of automatic (timed) punch-in and punch-out. Procedures for Punch In/Out are described in Chapter 6. The value for **Len** (Punch Segment Length) is calculated from the difference between the two points. It cannot be changed directly by the user.

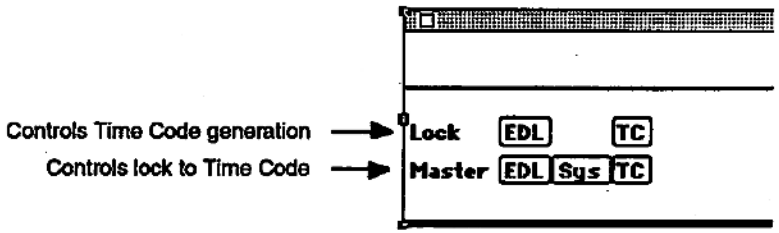


FIG. 5-6: The buttons in the rows labeled "Lock" and "Master" control generation and play to Time Code.

Control Section

The SonicStation is capable of both generating and synchronizing to time code.

In a synchronized system, there must be a "master" to which other systems are "locked." In the SonicStation, the master may be the Edit List (**EDL**) itself for normal playback, or time code (**TC**). The third choice of master, the "system" (**Sys**) locks the record process to playback, and is used when it is necessary to coordinate the two activities, as for punch-in (See next chapter).

When the system initially boots, both **Lock** and **Master** are set to **EDL** (Edit List). In this state, the system neither generates time code, nor responds to incoming code.

If **TC** (time code)is selected in the **Lock** row (and time code generation is enabled, as described in Chapter 12), time code is generated in time with playback. The type of code and any reader offset are set in **Time Code Read/Write Preferences**.

In the **Master** row, there can be only one button selected at any given time. If **TC** is selected, the target Edit List plays in response to incoming time code (only). If **TC** is selected for both **Lock** and **Master**, the time code generated is identical to the incoming code. **Sys** is used during synchronized record/play operations such as punch-in and capture (See Chapter 6).

Time Display Control

Located directly underneath the Current Location counter, these three buttons provides control of the display format for time values.

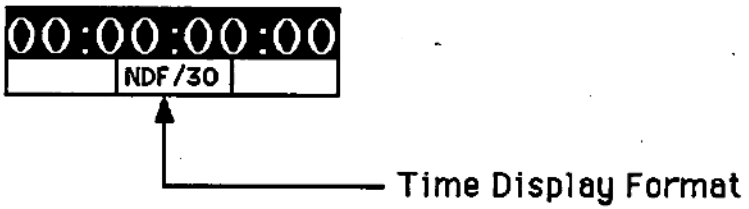


FIG. 5-7: The Transport Panel's Time Display Control provides ready control of one of the SonicStation's most important real-time parameters.

Time Display - The SonicStation can display time in many different formats. (See following section.) The converse of this is that it is often necessary to pay attention to the time display format in use, and to change it as required.

During recording, the time display format is derived from the **Global Time Display** parameter in the **Run-Time Preferences** dialog. When controlling an Edit List, the Transport Panel's time displays use the format that is specified for the target List. When slaving to time code (or using it to time stamp a recording) the system determines the format of the code being read and uses that as the display format.

If needed, the user can change the current time display format by click-holding on this button. A menu listing all of the time display options will pop up.

Displaying and Entering Time Values

The SonicStation uses a standard form for displaying and altering time values wherever they appear.

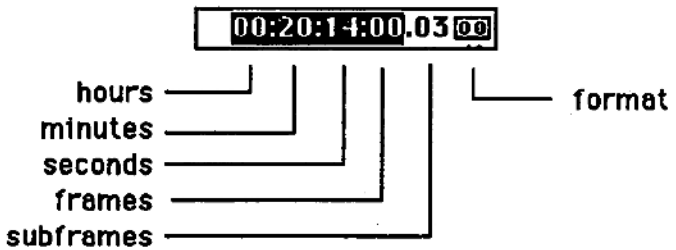


FIG. 5-8: Time Values are represented in a standard-format field.

Time values can be displayed in any of a number of formats in common use.

Initially, all time-display formats are set to **Non Drop Frame (30 FPS)**. This means that:

- Time is displayed in hours, minutes, and seconds.
- Seconds are divided into 30 *frames* apiece.
- Frames are divided into 80 *subframes*.

This default setting is used throughout the system, and need not be changed for many applications.

Entering Time Values

To enter a new value in a time field:

- **Select the field to be edited, then:**
- **Double-click to select the entire field, then type in the value. Digits scroll in from the right.**

OR **Select one section of the value (hours, minutes, etc.) and type the value for that field.**

OR **Select a field and click-drag up or down. The selected portion of the time value increments or decrements. The rate accelerates the longer the mouse is held.**

OR **Increment or decrement the value using the plus ("+") or minus ("-") keys on the numeric keypad.**

OR **Press the spacebar to "grab" the current time from the Current Location window.**

OR **Press the keyboard "-" key to negate the value displayed.**

OR **Move a value from another field using the standard Macintosh Cut-Copy-Paste commands.**

The entered value is checked when another field is selected, or when the Return key is pressed. If the value is not valid for the current display format (e.g. 65 seconds), the value is corrected to the closest valid time.

Changing the Time Display Format

Besides the initial default of **hours:minutes:seconds:frame.subframes** at 30 frames per second, other display formats are available, including:

- All commonly used time code formats and rates
- Film frames (16mm and 35mm),
- Decimal seconds
- Audio samples.

The figure below shows the available formats and how they look onscreen.

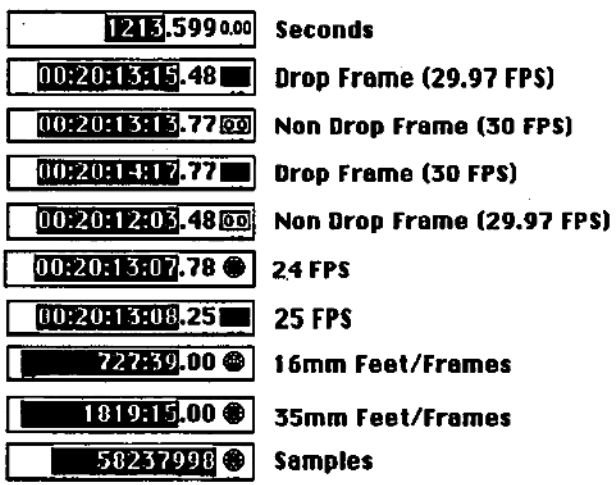


FIG. 5-9: Time display formats include decimal seconds, all common time code formats, film feet and frames, and samples

Note that the "indicator" icon at the right of the time field corresponds to the format displayed.

The format of time display is determined by user preference settings. The item **Display Time As** in the **General** section of the **EDL Preferences** dialog sets the format used in the editing display.

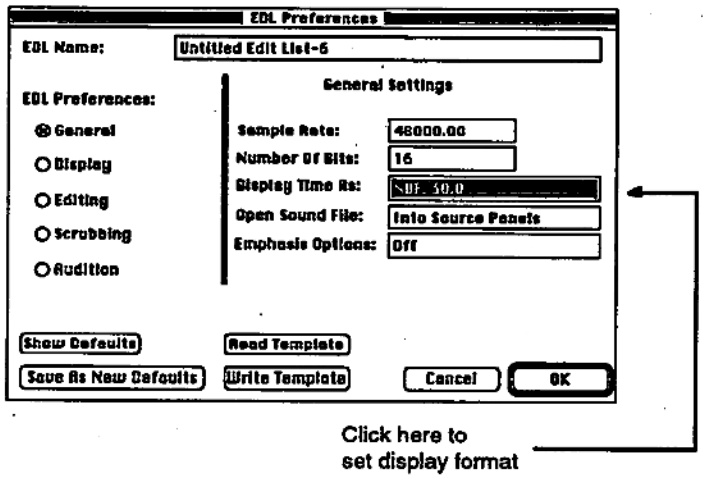


FIG. 5-10: The time display format of an Edit List can be set by choosing Edit List Prefs... from the Preferences item in the File menu.

Clicking the **Display Time As** field brings up a list of available formats. This setting may be stored (along with the other EDL preferences) as a default or as a template.

Everywhere else that time values are displayed, the display format is controlled by the **Run Time Preferences** dialog, also accessed from the **File** menu's **Preferences** section.

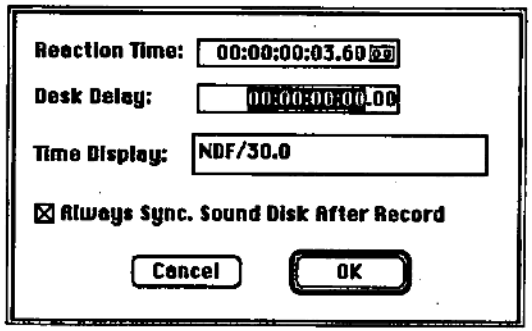


FIG. 5-11: The Time Display item in the Run Time Preferences dialog determines the time display format used outside of an active Edit List.

The display format for incoming time code (as well as times directly referenced to it) is determined solely by the format of the code itself.

> IMPORTANT! Serious problems in synchronization and editing can occur as a result of mixing time display formats. If the time display format is changed in the Edit List, for example, be sure that other time values are displayed in the same, or compatible, format.

To change the display format of a time field temporarily:

- Click-hold on the "indicator" icon to the right of the time value. This brings up the same list of choices as that found in the **Preferences** dialogs.

This is only a temporary shift. The time values revert to the format defined by the user preferences the next time they are displayed

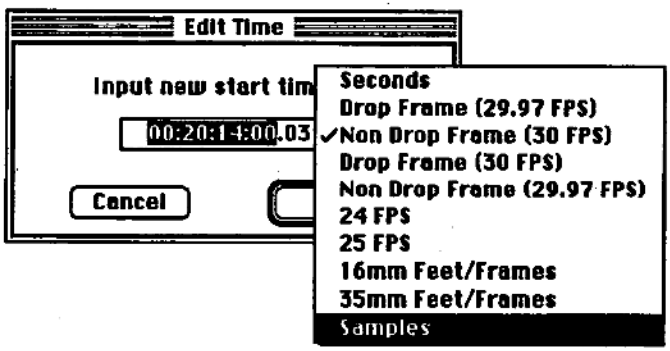


FIG. 5-12: Clicking the "format" indicator at the right of a time field brings up a menu to select the display format

II. Recording

The start-up tutorial in Chapter 2 describes how to record a Sound File for use on the SonicStation. For many situations, this procedure is sufficient. However, the SonicStation offers additional recording capabilities and options, including time-stamping of recordings for synchronization.

Setting Up for Recording

On the SonicStation, there are three easy ways to start the record process:

- Select **Record Sound File** from the **File** menu
- Select **New Sound File** from the **New...** item at the top of the **File** menu.
- Click the Transport Panel's Record button.

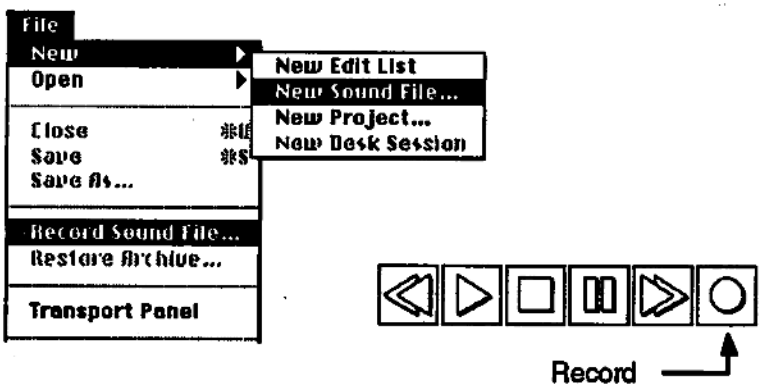


FIG. 5-13: There are three ways to begin the process of recording a Sound File on the SonicStation.

In each case, the result is the same. The **Record Sound File** dialog opens, as well as the Transport Panel, if it is not already onscreen. On the Transport Panel, the Play, Pause, and Record buttons are highlighted in preparation for recording.

Once any changes or needed information are entered into the **Record Sound File** and **Record Preferences** dialogs (see below), actual recording is started by pressing the Pause button on the Transport Panel.

The Record Sound File Dialog

This dialog controls the recording process.

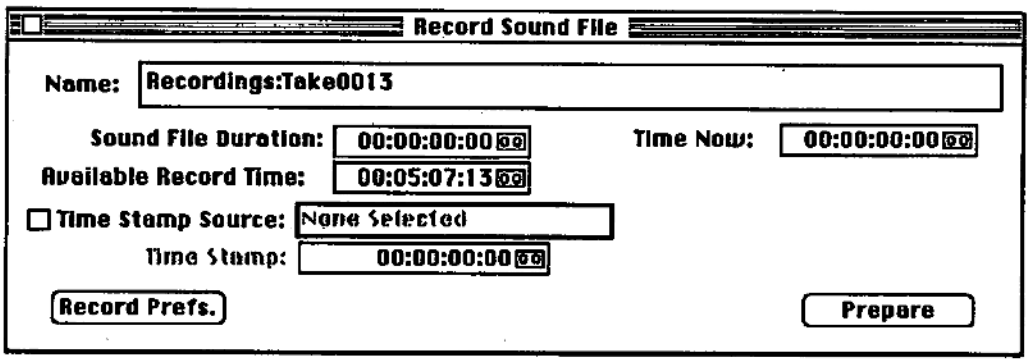


FIG. 5-14: The Record Sound File dialog is the center of control for all record operations.

The SonicStation's initial default settings are such that it is not necessary to change anything in this dialog or do anything else before recording. One can simply press the Pause button on the Transport Panel, and the recording begins.

The record parameters in the **Record Sound File** dialog come into play when you wish to:

- Change the name of the recorded Sound File to something other than the default.
- Pre-specify the duration of the Sound File to be recorded.
- Use time code to "stamp" the recording for synchronization.
- Change the configuration of recording, as when capturing sound from the Mixing Desk.

Each section of **Record Sound File** addresses a particular part of the process.

Name: Recordings:Take0002

Every recording is assigned a name at the time of recording. This name defines a set of nested folders in the Macintosh file system. The topmost folder is always the **SND** folder created at the time the system is installed. The title displayed in the **Name:** field defines a set of folders inside of **SND**.

Folders are nested in order, starting from the left, with colons separating the names of different folders.

The last folder (in this case "**Take0002**") contains the actual Sound Files (One for each channel for stereo. A Sound File is always monaural, although for convenience this manual often speaks of a stereo recording as though it were a single Sound File.)

When **Record Sound File** opens, the name of the Sound File is set to a defined default.

To set the default name:

- choose **Recording Path Prefs...** from the **Preferences** item of the **File** menu.

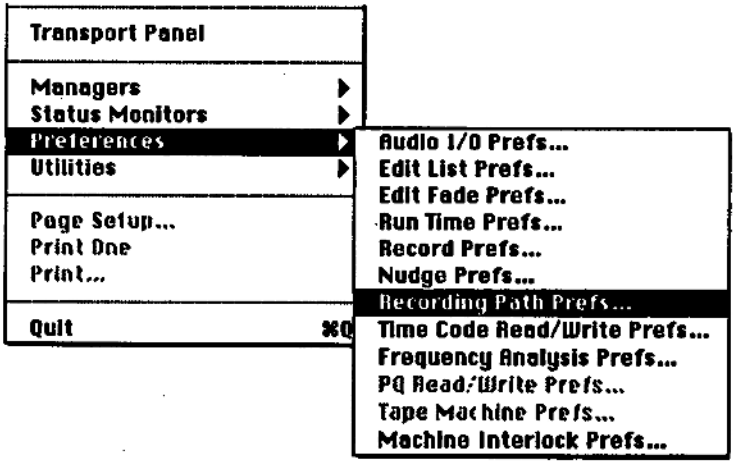


FIG. 5-15: The default name and storage location of a recording are determined by user preference.

This brings up a dialog that provides for a 2-level nesting of folders inside the SND folder, along with numbering of individual recordings.

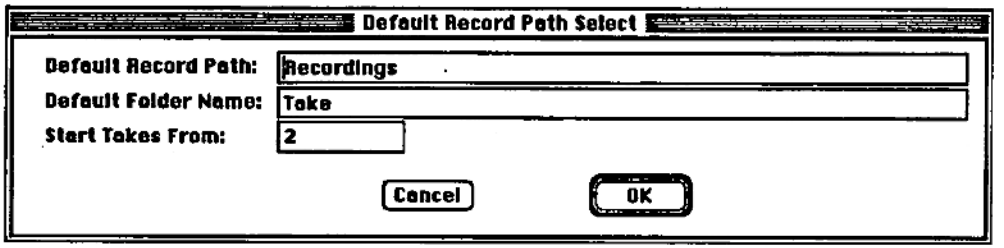


FIG. 5-16: The Default Record Path Select defines the name and number of recordings that are not explicitly named by the user.

The initial default of the system is as shown. As recordings are made, they accumulate within the folder **Recordings** inside of SND. Each individual recording is represented by a folder named "**Take**xxxx."

The user may choose any legal name (see below), but the system of describing each recording as a "Take" and collecting these under an obvious name such as "Recordings" has proven useful in a variety of contexts.

When a new recording is made, the number of the "**Take**" (or whatever other name is chosen) is incremented.

Legal Sound File Names

Sound File and folder names may include:

- Upper and lower-case letters
- Numerals
- Spaces and Punctuation marks *except* the period (".") as noted below

> **IMPORTANT!** Sound File names may not include a period. The SonicStation itself uses periods to indicate the channel number of a stereo or multichannel recording. Periods included in the name by the user lead to serious confusion in the organization of files.

Colons (":") are used to separate the names of folders in the nested series.

The maximum length of the name for a Sound File folders is 31 characters. If this length is exceeded, a warning message appears when the recording is started.

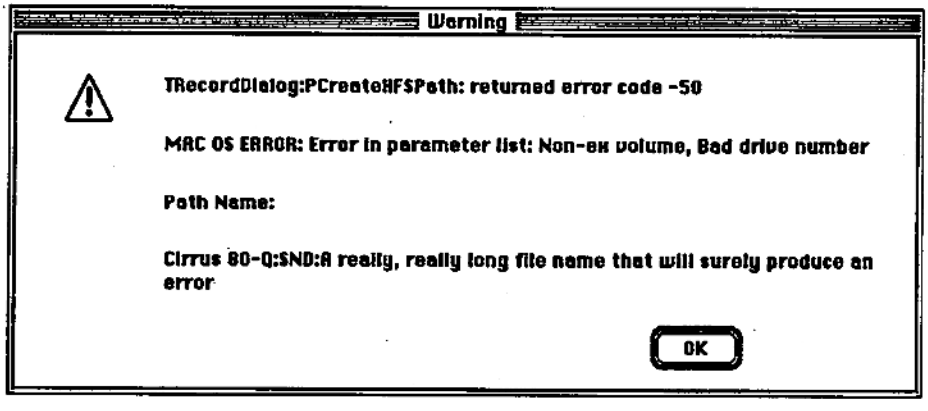


FIG. 5-17: Folder names longer than 31 characters will cause an error message to appear when the recording is started.

The SonicStation limits the number of nested folders to 6. The SND master folder is the (implied) top level of the hierarchy, so the maximum number of folders that can be defined in a Sound File name is five. If this number is exceeded, the system returns a warning message when the File is prepared for recording.

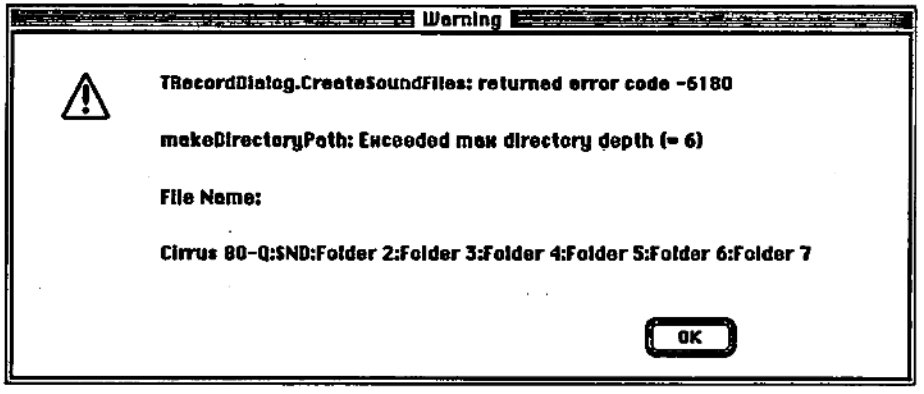


FIG. 5-18: This warning message indicates that there are too many individual folders (separated by colons) in the Sound File name.

Record Sound File includes fields that relate to the length of the recording.

Recording Parameters

Sound File Duration: 00:00:00:00 00

In setting up a recording, the user has the option of specifying the length of the recording in advance. This is not necessary in order to record, but there are advantages in using this *pre-allocation* .

- Pre-allocated Sound Files use space on the Sound Disk(s) more efficiently. This is especially true in multi-disk systems.

- Pre-allocated recordings automatically terminate after the specified time, relieving the user of the need to remember to stop the recording.

  This is especially helpful when *loading* material in the background while editing at the same time in the foreground (See next chapter). If you are not monitoring while recording, it is easy to lose track of time.

Pre-allocation alters the way a recording starts. Non-allocated recording begin as soon as the Pause button on the Transport Panel is pressed, although the screen display lags by a few seconds.

Pre-allocated recordings use a countdown of a few seconds, provided to allow for cueing of source material on tape or CD. Be sure to observe this countdown when recording with a pre-allocated Sound File.

Available Record Time: 01:13:12:07 00

This shows the recording time available on the Sound Disk selected for recording (See the discussion of **Record Preferences** below). This value takes account of the number of channels being recorded and the current sample rate.

Time Now: 00:00:00:00

While recording, the **Time Now** field displays the current time. The incrementing of the display tends to be somewhat "jerky," depending on the model of Macintosh used, because the system treats audio as its highest priority and only updates the display when it can do so without interfering with recording.

☒ **Time Stamp Source:** Time Code Reader Port 2

Time Stamp: 00:00:00:00.00

When using time code to synchronize the SonicStation with other equipment, it is necessary to "stripe" the Sound File with the current time code value at the time of recording. This is done by recording a single value of time code, called the "**Time Stamp**" at the start of the recording. On playback, the SonicStation uses this time to trigger playback to incoming time code. From that point, actual synchronization is maintained by the SonicStation's sample clock. (See Chapter 12.)

To record with Time Stamping:

- Make sure that time code reading is enabled using **Time Code Read/Write Preferences**, and that valid time code is available.
- Click the check box next to the words **Time Stamp Source:** This brings up a dialog to select the source of time code.

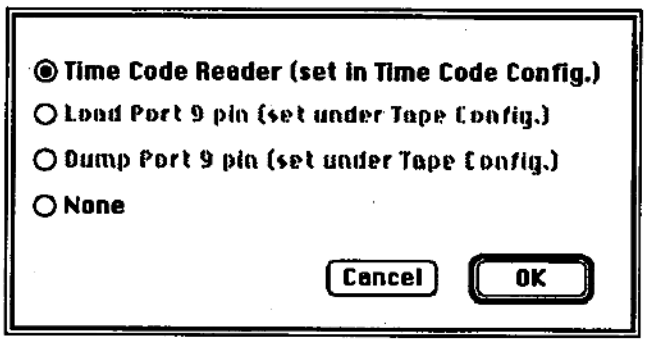


FIG. 5-19: In the basic SonicStation, only the Time Code Reader is available as a source for Time Stamping.

- Select **Time Code Reader** as the source and click **OK**.

The only active choices in this dialog are **Time Code Reader** and **None**. The Expanded SonicStation can also use time code provided over a serial link to an audio or video tape transport.

The SonicStation is now prepared for Time Stamping. Before recording begins:

- Make sure that valid time code is present,

Then start the recording normally. As the recording begins, the value of the Time Stamp appears in the window. This value is stored along with the Sound File, and is used when the command **Open Sound File with Offset** is used to open the file into an active Edit List.

Prepare

This button may be used to reduce the lag time between starting a recording and actually beginning to record sound. Normally, the system begins recording by preparing the folder and Sound File documents according to the settings for the recording path (**Name:**) and the name of the individual files as described below under **Record Prefs.**

The **Prepare** button performs this process in advance of recording. Then, when the recording is started, the files are already prepared and recording can start immediately.

Record Prefs.

The **Record Prefs** button brings up the same dialog invoked by selecting **Record Prefs...** from the **File** menu's **Preferences** section.

This dialog provides access to many of the SonicStation's advanced recording features.

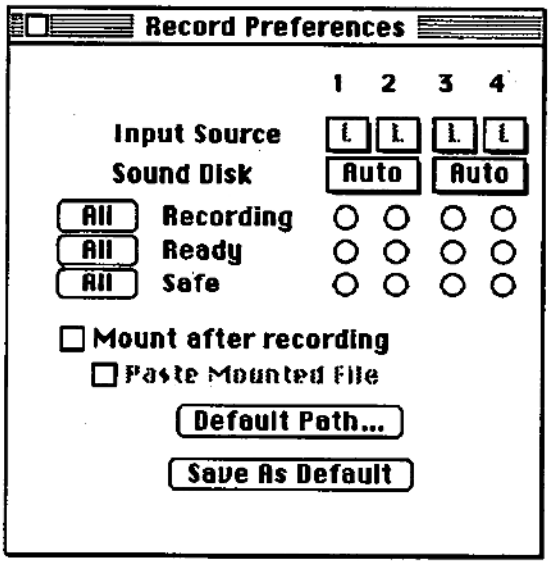
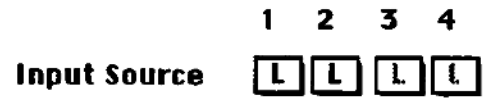


FIG. 5-20: The Record Preferences dialog is used to select mono or stereo recording, to arm channels for punch-in, and to set up the SonicStation to capture the output of the Mixing Desk into a Sound File.

The **Record Preferences** dialog is arranged into four "strips." These represent channels of recording. In the basic SonicStation, only channels 1 and 2 are available for recording. In the four-channel Expanded SonicStation, all four inputs are available for use.



The selection of input source determines the function of the particular record channel. The input source is selected by clicking one of the boxes in this row.

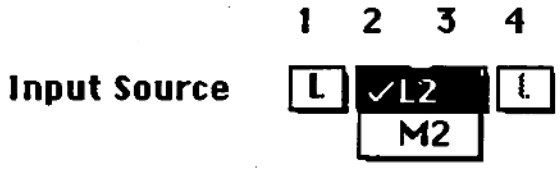


FIG. 5-21: The Input Source for each record channel may be selected as Line (L1-L4) or Mix Buss (M1-M4). In the basic SonicStation, L3-L4 and M3-M4 are not active.

The choices available for input sources are;

- Line (L1, L2
- Mix Buss (M1, M2)

Line inputs are the digital audio inputs to the SSP-3 card. For the basic SonicStation, inputs L3 and L4 are shown, but are not active.

One or more of the Mixing Desk's output busses may be selected as an input source in order to capture the output of the Desk into a new Sound File. In this case, the Desk's inputs may be the line inputs, or an Edit List being played back.

Capturing the output of the Desk with Line inputs selected allows the user to apply the Mixing Desk's filters and gain adjust feature during recording.

Recording the Mixing Desk's output with an Edit List's Audition Channels as input reduces the Edit List to a single continuous Sound File. This can be used to free up channels by "bouncing" a multi-channel Edit List down to one to four channels, or to reduce the size of a complex Edit List by recording it as a single file.

Sound Disk [Auto] [Auto]

The selection of Sound Disk is vitally important if the SonicStation is configured with more than one Sound Disk. (Otherwise, it serves no purpose and may safely be ignored.) The setting of **Sound Disk** may be changed by clicking the box and selecting from the pop-up list. The available selections are:

Auto	The system automatically chooses the Sound Disk, selecting the disk with the least amount of space that will accommodate the duration allocated for the recording using **Sound File Duration.** If no allocation has been made, the disk with the most space is chosen.
Always Ask	Each time a recording is started, the system will bring up a dialog requiring the user to choose one of the connected Sound Disks.
Sound Disk	Each disk attached to the system is listed by name. This is a "hard" assignment that forces the recording to place all Sound Files on that disk until the setting is changed.

The default setting is **Auto**. This uses disk space most efficiently by selecting the Sound Disk with the *least* amount of space to satisfy a pre-allocated recording, or the disk with the *most* free space in the case of unallocated recording.

[All]	**Recording**	◉	◉	○	○
[All]	**Ready**	○	○	○	○
[All]	**Safe**	○	○	○	○

Each record channel has three states that control it's action during recording. The state of each channel may be set separately, or the **All** buttons at the left may be used to set all channels as a group.

Channels to be recorded are set to **Recording**. (In the basic SonicStation, channels 3 and 4 cannot be armed.) The initial default setting for **Record Preferences** arms the first two channels. This lets the user proceed with recording without visiting the Preference dialog.

The **Ready** setting is used for Punch-in and Punch-Out, either automatic or manual. When the punch is performed, the **Ready** channels drop immediately into Record. **Safe** means that the designated channel is not recorded.

Default Path...

The brings up the **Default Record Path Select** dialog, as described in the discussion of the **Name:** field in the **Record Sound File** dialog.

☐ Mount after recording

The user has the option of automatically opening a recording into a currently active Edit List. This can be convenient and useful, but the user should be wary of leaving this box checked as a default. An allocated background recording might unexpectedly appear in the Source panels of the Edit List you are working on!

Save As Default

When the settings of the **Record Preferences** have been changed, the user has the option of saving the current settings as the default to be used whenever a new recording is initiated.

III. Organizing Sound and Maintaining the File System

In using the SonicStation, the operator faces the challenge of keeping track of different recorded materials on the disk, of deleting material that is no longer needed, and of keeping the file system on the disks in a workable state. These maintenance chores are performed using a combination of the **Sound File** and **Sound Disk Managers** within the SonicStation applications, and the Macintosh's own hierarchical file system.

Using the Sound Disk and Sound File Managers

Chapter 1 briefly introduced the **Sound Disk** and **Sound File Managers**. These two dialog windows are vital in maintaining your Sound Disks and organizing the Sound Files on the disks. Both dialogs are accessed from the **Managers** item in the **File** menu.

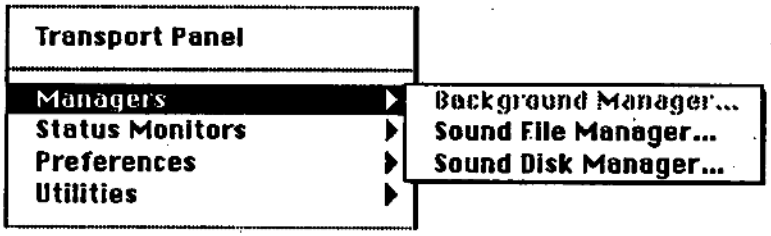


FIG. 5-22: The Sound File and Sound Disk Managers are accessed from the File menu.

The **Sound Disk Manager** lists the Sound Disks connected to the system, with their capacity in time, the amount of space already used, and the amount remaining.

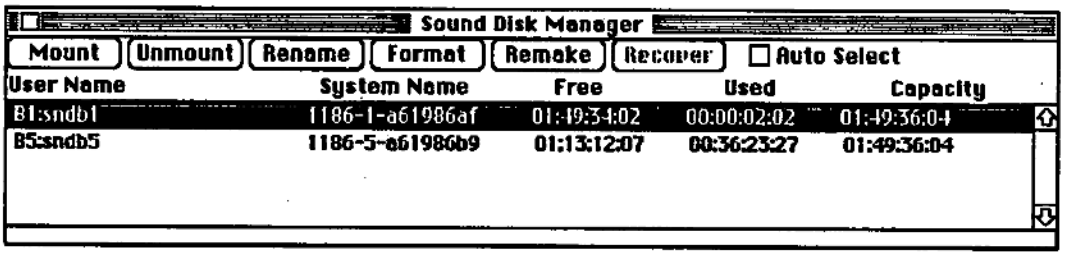


FIG. 5-23: The Sound Disk Manager displays the state of all disks connected to the system.

NOTE: The times displayed in the **Sound Disk Manager** are calculated on the basis of stereo recording at the current sample rate, but do not take account of the space required for waveform display files. The actual available recording time is typically about 12 percent less than the displayed value.

Mount Unmount

The **Mount** and **Unmount** buttons are not currently active. In future, they will be used in conjunction with removable recording media such as magneto-optical (MO) drives, and the SonicNet™ high-speed digital audio network.

Rename

Each Sound Disk has two names. The **User Name** is split into two parts as well. The first part of the user name combines the designation of the Macintosh NuBus slot occupied by the SSP-3 card and the SCSI ID number of the drive (see Chapter 1). For example, "B1" means that the SSP-3 card is in NuBus slot "B" and the drive is assigned SCSI ID 1. These designations become very useful when there are multiple drives in use.

The second part of the user name can be selected by the user, but initially defaults to "snd" followed by the slot number/SCSI ID in lower case format. When the **Rename** button is pressed, it brings up a dialog to change the name of the disk.

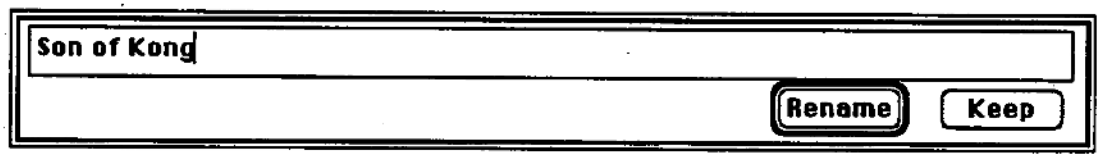


FIG. 5-24: The user name of a Sound Disk may be changed to suit the user.

The **System Name** for a disk is assigned by the SonicStation at the time the disk is formatted, and may not be changed by the user. The name is formed from a combination of the slot number, SCSI ID and the date and time of formatting. The intention is create an absolutely unique identifier so that Sound Disks may be exchanged between systems without the possibility of confusion that could be caused by disks with identical names.

Format **Remake**

The **Format** and **Remake** buttons are key elements in maintaining the Sound Disks. Their use is complex enough to warrant a separate discussion. The section following this one, "Maintaining the Sound Disk," covers their use in detail.

The **SoundFile Manager** window lists all Sound Files on the Sound Disks connected to the system.

SoundFile Manager

Select All | Deselect All | Delete | Copy | Get HDRs | Info | Rename | Next | Previous

Volume	Name	Duration
b5:sndb5	Tests:Take0014:Source.2	00:01:14:07
b5:sndb5	Tests:Take0014:Source.1	00:01:14:07
b5:sndb5	Tests:Take0022:SOURCE.2	00:00:20:01
b5:sndb5	Tests:Take0022:SOURCE.1	00:00:20:01
b5:sndb5	Tests:Take0017:Source.2	00:00:11:04
b5:sndb5	Tests:Take0017:Source.1	00:00:11:04
b5:sndb5	Tests:Take0016:Source.2	00:00:20:24
b5:sndb5	Tests:Take0016:Source.1	00:00:20:24
b5:sndb5	Tests:Take0032:SOURCE.2	00:00:08:05
b5:sndb5	Tests:Take0032:SOURCE.1	00:00:08:05
b5:sndb5	Tests:Take0026:SOURCE.2	00:04:03:14
b5:sndb5	Tests:Take0026:SOURCE.1	00:04:03:14
b5:sndb5	Tests:Take0013:SOURCE.2	00:00:53:13
b5:sndb5	Tests:Take0013:SOURCE.1	00:00:53:13
b5:sndb5	Tests:Take0025:SOURCE.2	00:01:05:10
b5:sndb5	Tests:Take0025:SOURCE.1	00:01:05:10

FIG. 5-25: The Sound File Manager provides a complete list of all Sound Files currently on the disk.

The **Volume** column lists the Sound Disk on which each file is found. The **name** of each file is listed in its entirety, showing the complete series of folders (except for **SND**) together with the names of the individual monaural Sound Files. A stereo recording, then, is represented by two entries, **Source.1** and **Source.2**. The actual duration of each file is listed along the right of the window.

Select All | Deselect All

The operations in the **Sound File Manager** apply to one or more *selected* files. A single file may be selected by clicking, and multiple files may be selected by holding down the ⌘ key while dragging the mouse.

In some cases it is most desirable to select all of the files currently on disk. **Select All** and **Deselect All** provide convenient ways to choose all of the files and the strike that selection when finished.

Delete

Unlike tape, Sound Disks are fixed media that cannot be switched easily. Sound File recordings remain on the disk until they are explicitly removed, and the disk can quickly become filled with recordings that are no longer needed.

To use **Delete**:

- Select one or more Sound Files.
- Click **Delete**

A dialog appears that prompts the user to confirm the intention to delete the file or files.

FIG. 5-26: The Confirm Delete dialog is provided to avoid accidental deletion of Sound Files.

If **Yes** is selected, the system deletes the selected Sound File.

To delete multiple files:

- Select all of the files to be deleted using Shift-clicking.
- Choose **Delete All Selected Files** when the **Confirm Delete** dialog appears.

The system then deletes each file in turn, a process that requires about 3 seconds per file. If a large number of files are selected, the delete process may take a minute or more.

NOTE: To delete all files on one or more disks, the fastest way is to use the **Remake** command in the **Sound Disk Manager** as described below.

Copy

The **Copy** command produces a "clone" of the selected file or files. The copy may be made on the same disk, or (in a multi-disk system) on another disk. Clicking the **Copy** button initiates a series of dialogs to select the name and destination of the copy.

Get HDRs

The SonicStation's Sound Files appear to the user as though they were files on the Macintosh hard disk, but the actual files reside on the Sound Disk. The SonicStation application maintains a list of files by referring to a portion of each Sound File called a "header."

In some circumstances, the list of files in the Macintosh SND folder may not match the actual files on disk. In this situation, the **Get Headers** command resolves the conflicts by reading the headers from the Sound Disk and placing them in the SND folder.

More details on using **Get HDRS** are provided in the section on maintaining the Sound Disk file systems.

Info

Each Sound File has several auxiliary parameters that are used in editing and playing the sound. The **Sound File Information** dialog lets the user examine and, if necessary, change these.

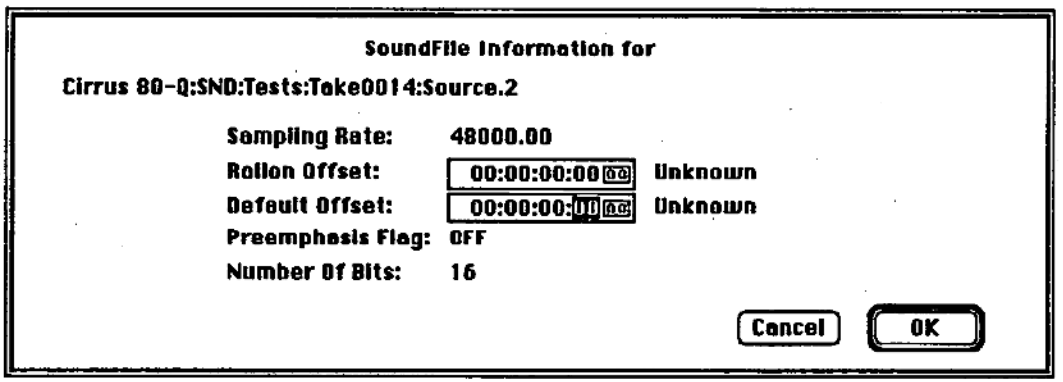


FIG. 5-27: The SoundFile Information dialog displays and edits various information about the file.

The **Sampling Rate** of a Sound File is determined by the sample rate in use when the file is recorded. Normally, this information does not need to be changed.

Rollon Offset is used principally in synchronizing to time code. At the time of recording, the offset is set using the Time Stamp feature described earlier in this chapter. When the file is opened using the **Open with Offset** variant of **Open Sound File**, the Sound File is placed to start at the point indicated by the **Rollon Offset**, rather than at zero time as occurs with the basic command. **Rollon Offset** is a time value, and may be edited by typing or dragging as described earlier.

The **Default Offset** is assigned to files that are recorded without Time Stamp. Normally, its value is zero, but any value may be entered if desired.

Preemphasis Flag is set at the time of recording, according to the state of the Emphasis Flag in the digital audio stream entering the SSP-3 card. Normally, this should be left alone, as it governs the assignment of deemphasis during playback.

In the SonicStation, the **Number of Bits** is limited to 16, the standard for Compact Disc and professional recording. The Expanded SonicStation supports storage and playback of audio with up to 24 -bit resolution.

Maintaining the Sound Disk System

Like any piece of machinery, the SonicStation requires some maintenance. Generally speaking, the maintenance needed is minimal but it is important. It's rather like brushing one's teeth. If done regularly, there need never be a serious problem, but if neglected, small problems can mushroom into catastrophe.

As a computer, the SonicStation needs almost no mechanical maintenance beyond periodically cleaning the mechanism of the mouse or trackball. However, the file systems on the Sound Disks are complex pieces of "cybernetic" machinery that must be attended to periodically.

Remaking the File System

When a Sound Disk is new, and freshly *formatted,* its storage space is divided into neat bins of digital data. When Sound Files are recorded, they are placed on the disk as space is available. As work progresses, the user will typically delete many files and record new ones. In this process, the SonicStation apportions space on the disk to each file, and will often divide a file into more than one piece to make efficient use of space. This process is necessary. Without it, the Sound Disks would very quickly become useless because the sections of contiguous storage space become small and scattered all over the disk.

With ongoing usage the disk storage become increasingly *fragmented,* the use of space become less efficient, and the disk system slows down. Periodically, the Sound File system should be *remade* using the **Remake** button in the **Sound Disk Manager.** This restores the Sound disk to its initial state. It also erases all Sound Files on the disk.

Since all files are lost when the file system is remade, the best time to remake the disk is between projects.

To remake the file system on a Sound Disk:

- **Open the Sound Disk Manager**
- **Select the disk or disks whose file systems are to be remade**
- **Click the Remake button**

The SonicStation brings up a dialog to rename the disk if desired, then presents a message to confirm the intention to remake the system. Remember, all files on the disk will be lost, so make sure that you are completely finished with the files on disk. Any files to be kept for future use should be *archived* following the procedures outlined later in this manual, or moved onto a different disk.

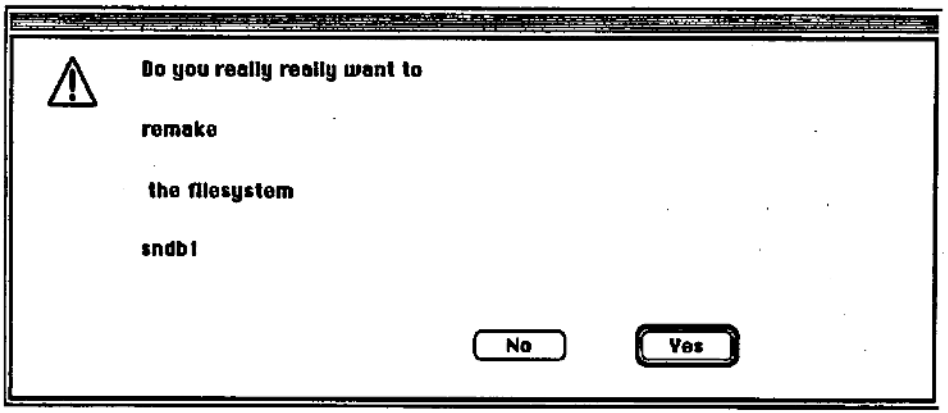


FIG. 5-28: Remaking the file system on a Sound Disk erases all Sound Files on that disk, so be sure of your intention before you proceed.

Another dialog informs the user that the SonicStation application will quit at the end of the remake. This also provides another opportunity to cancel the operation.

Once the file system has been remade, it is still necessary to clear out the *headers* in the Macintosh SND folder. These are small files that "point" to the much larger Sound File on the Sound Disk itself.

After the remake is complete, and the application has quit:

- Open the Macintosh SND folder
- Delete all files that match files on the disk or disks that were remade. In many cases this will be all files. However, be careful that Edit Lists or Project (Archive) files are not deleted inadvertently.

The rate at which a Sound Disk's system becomes fragmented varies greatly, and it is difficult to make a firm rule about when to remake. For most situations, remaking the disks between projects is more than adequate. If constant usage prevents this for more than a few weeks, it is a good idea to make a point of clearing off the disk and remaking the system.

Getting Sound File Headers

After a remake or reformat, the user may notice that the names of the erased files still appear in the selector dialogs for opening Sound Files and Edit Lists. This is because the SonicStation puts a type of "place holder" file on the Macintosh hard disk to "point to" the actual Sound File. When the disk is remade or reformatted, the actual file on the Sound Disk is eliminated, but the Mac pointer files remain. This situation can also occur if disks are swapped between systems.

To correct this kind of situation, the command **Get HDRs** (Get Headers) from the **Sound File Manager** is used. This commands causes the system to go to the Sound Disk, retrieve the "header" that contains the critical information needed for each file, and places that information into the **SND** folder for use by the system.

Get HDRs may be performed on individual files, but in most cases it is performed on all files at once.

To recover the Sound File headers in the SND folder:

- Open the **Sound File Manager**
- Choose **Select All**
- **Choose Get HDRs**

The SonicStation goes through all of the files one at a time, moving the headers into the SND folder as needed. This process takes a couple of seconds per file, and can become a little bit lengthy if there are a lot of files on disk.

Reformatting the Disk

Beyond remaking the file system lies *reformatting*, in which the actual structure of the disk is destroyed and reconstructed from scratch. In normal circumstances, reformatting should never be necessary, provided the file systems are remade periodically.

However, if problems occur with the SonicStation software or the Sound Disk hardware, reformatting may become necessary. The indication would be persistent problems with Sound Files, problems that do not go away after remaking the disk and reloading the files.

The procedure for reformatting is similar to that of remaking the file system. The disk to be formatted is selected in the **Sound Disk Manager**. Then the **Format** button is used to begin the process. A series of dialogs confirms the users intention to format the disk and, hence, erase all files present on the disk.

The reformat process take *much* longer than remaking. The exact length of time varies with the size of the disk and other factors, but can easily exceed an hour. When the format is completed, the SonicStation application exits.

To reiterate, reformatting is a moderately drastic (and time-consuming) step and is probably unnecessary except as a *corrective* action in case of trouble.

Maintaining the SND Folder

When Files are deleted using the **Sound File Manager**, or when a Disk's file system is remade or the disk reformatted, the files are removed from the disk, and their headers in the SND folder are removed.

However, these actions do not affect the folders in which these headers are nested. As a result, the SND folder tends to become cluttered with numerous folders that contain nothing. This can sometimes be a major problem if different operators are using the same system.

Whenever files are deleted, it is a good idea to go the Macintosh Finder and delete the corresponding folders from the SND folder. In doing this, you are likely to also delete Edit Lists at times, as well as Projects that have been used to generate Archives. (See Chapter 13, Archive and Restore.) In most cases, this should not be a problem, since these documents will typically be ones that used the deleted files, making them no longer valid.

If it is desirable to save an Edit List after its source Sound Files are deleted, the document may be moved to another folder on the Macintosh.

When Sound Disks are remade or reformatted, it may be most convenient to simply delete all contents of the SND folder. Be careful, however, that there are no Edit Lists or other documents inside the folders that you want to keep.

Summary

The SonicStation provides comprehensive facilities for recording, playback, and synchronization to time code. Full use of these facilities requires knowledge of the Transport Panel, and how time values are entered into the system.

The **Record Sound File** and **Record Preferences** dialogs let the user control all parameters of recording. The default settings are suitable for most purposes.

The **Sound Disk** and **Sound File Managers** let the user examine the current contents of the Sound Disks, resolve differences between the file system on the Sound Disks and the image of it that the Macintosh uses, and maintain the Sound Disks by deleting unneeded files and periodically remaking the file system or reformatting the disk.

The next chapter describes the commands used to play audio from an Edit List, and how to use the advanced recording features of Punch-In/Punch-Out and Capture from the Mixing Desk.

Chapter 6

Playback, Punch-In, and Capture

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Introduction

Playing sound from an active Edit List is simple. All the user has to do is:

- **Press the Space Bar on the Macintosh keyboard, or**
- **Click the Play button on the Transport Panel.**

Beyond this simplicity are a whole set of commands to audition any desired section of an Edit List for editing purposes.

The SonicStation is capable of recording at the same time that audio plays. This permits *background recording,* in which the user edits and auditions current Sound Files and Edit Lists while at the same time loading additional material.

This ability to record and play at the same time is also used to :

- "Punch-In" to record while playing back, so as to insert new material into an recording.
- Record the output of the Mixing Desk's mix busses to "capture" a complex Edit List as a single Sound File with mixing and equalization.

The Play commands are flexible and, as in other aspects of SonicStation operation, there is often more than one way to achieve a desired result.

I. Playing from an Edit List

Most commonly, the user chooses one of two ways to initiate play: the Space Bar on the Macintosh keyboard or the **Play** button on the Transport Panel. These two commands behave somewhat differently in selecting the point where playback begins. First, however, the user needs to understand how the SonicStation decides which panel or panels of the Edit List to play.

What Plays When You Press Play?

Many users will have the experience of creating a new Edit List, opening a Sound File into its Source panels, and then pressing the Space Bar (or the Transport Panel's **Play** button) only to get no response.

This occurs because no panel has been *selected*. Once a panel is selected (by clicking it with the mouse), playback works fine.

> **IMPORTANT!** One or more panels in an Edit List *must* be selected in order for audio to play.

The SonicStation plays the selected panel, *plus* any panels that are in the same Sync Group.

(Reminder: A panel's Sync Group is indicated by the small square box with a capital letter at the left side of the panel. See Chapters 3, 7, and 11.)

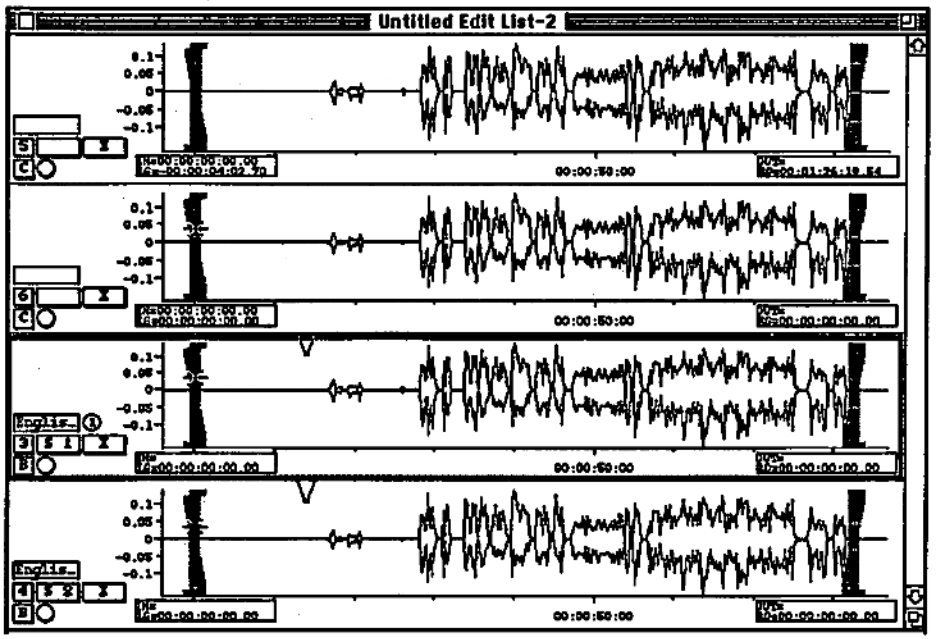


FIG. 6-1: **When a Play command is issued, the selected panel and other panels in the same Sync Group (indicated by capital letter at panel's lower left) play.**

If the Shift key (for contiguous selection) or the ⌘ key (for discontiguous panels) is held down while selecting, the user can select multiple panels. If panels of more than one Sync Group are selected, the system looks at the *topmost* selected panel and plays that panel's Sync Group *only*.

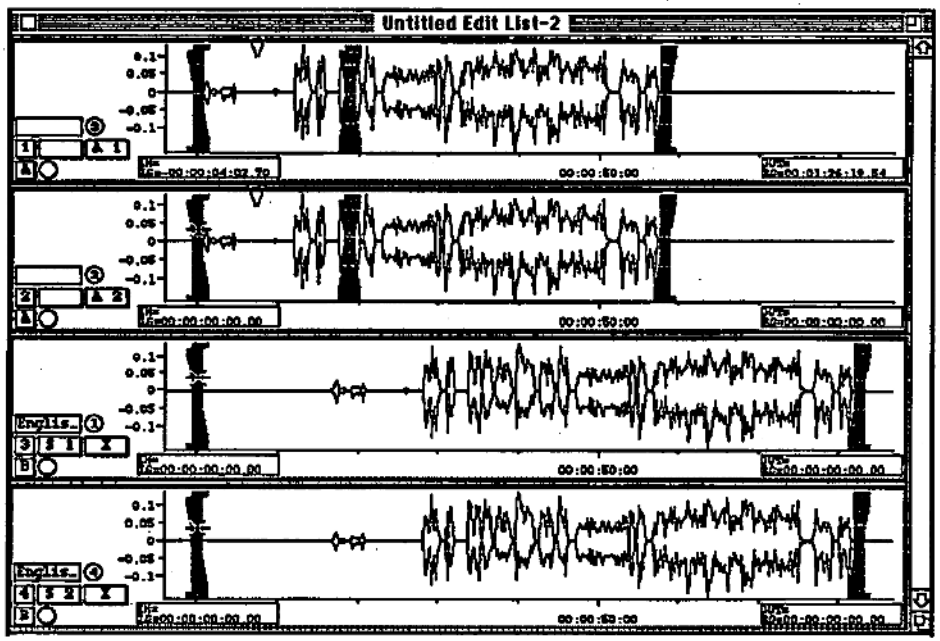


FIG. 6-2: When multiple panels are selected, the SonicStation looks at the topmost selected panel, and plays it along with all other panels in its Sync Group.

If the Control key is held down while pressing the Space Bar (or issuing another Play command), only selected panels (*all* selected panels) will play.

- Control-Space Bar causes only selected panels to play. Unselected panels *do not* play, even if they are in the same Sync Group as the selected panel(s).

By selecting panels, it is easy to audition the Source or Destination groups as desired. The only problem that can occur is if no panel has been selected. In that case there is no playback of audio at all.

The Space Bar, Transport Panel, and Keyboard

The SonicStation provides quick and easy ways to trigger playback, as well as specialized menu commands to play only specific sections of audio. The three non-menu ways to trigger playback are:

- The keyboard Space Bar
- The onscreen Transport Panel
- The "C" and "V" keys on the keyboard

These keyboard and screen commands make it easy to trigger playback from an Edit List at any time.

The Space Bar

While editing, the user may press the keyboard Space Bar at any time. Provided that at least one panel is selected, and there is not already an audition of audio in progress, the SonicStation starts to play from the position of the Left Gate in the selected panel when the Space Bar is pressed. If there is no Left Gate present, playback commences from the beginning of the Edit List.

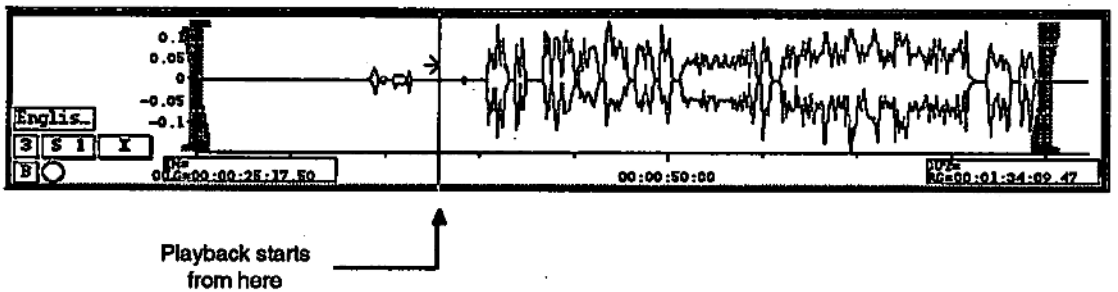


FIG. 6-3: When the keyboard Space Bar is used to trigger audio, playback begins from the position of the Left Gate in the selected panel

Pressing the Space Bar again terminates playback immediately. The next time the bar is pressed, playback commences again from the Left Gate.

Playback Using the Transport Panel

The floating Transport Panel's **Play** button is also a convenient way to start playback during editing. Whereas the Space Bar always starts playback from the Left Gate, the Transport Panel starts playback from the *current location*, that is, the time location shown in the Location Counter.

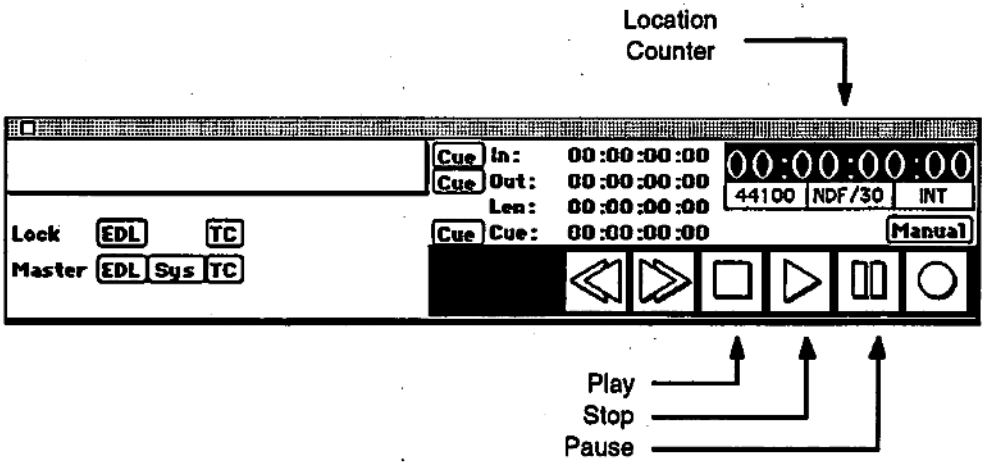


FIG. 6-4: The Transport Panel's Play button begins playback from the time displayed in the Location Counter.

When playback stops, the location counter retains the current position, so that pressing **Play** again makes the playback continue from the point that it left off.

Using the "C" and "V" Keys

Playback may be started and stopped by pressing the keys "C" (to start) or "V" (to stop). These behave the same as playback from the Transport Panel, in that the play location is retained when play is stopped and used as the starting point the next time the "C" key is pressed.

Placing Edit Marks During Playback

Any of the standard edit marks, (See Chapters 3 and 8) including In or Out edit points and Track Start/End, can be placed "on the fly" as audio plays.

To place editing marks during playback:

- **Begin play.**

- **At the spots where you wish the edit points placed, press the command key sequence ⌘- Left Bracket ([) or ⌘- Right Bracket (]) to place In or Out points.**

<u>OR</u> **Use menu commands or QuicKeys equivalents to place Track, Segment, Index or other marks as desired.**

The marks are displayed in the Panel being played as they are placed. Afterward, the location of all points can be adjusted as described in Chapter 8.

Tracks, Audition Channels, and Multitrack Play

At the left of each panel is a box that designates the *Audition Channel* that a panel is assigned to. These can be changed by clicking this box and selecting from the menu that appears. Available Audition Channels are A1, A2, A3, and A4.

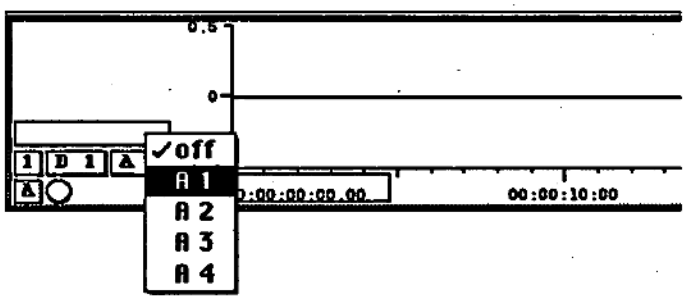


FIG. 6-5: Each panel is assigned to one of four Audition Channels.

Besides A1-A4, the user has a selection of "off," which prevents that panel from playing.

The input of each of the Mixing Desk's four channel strips may be assigned to any one of Audition Channels A1-A4. The audio from each panel appears at the channel strip assigned to the same Audition Channel.

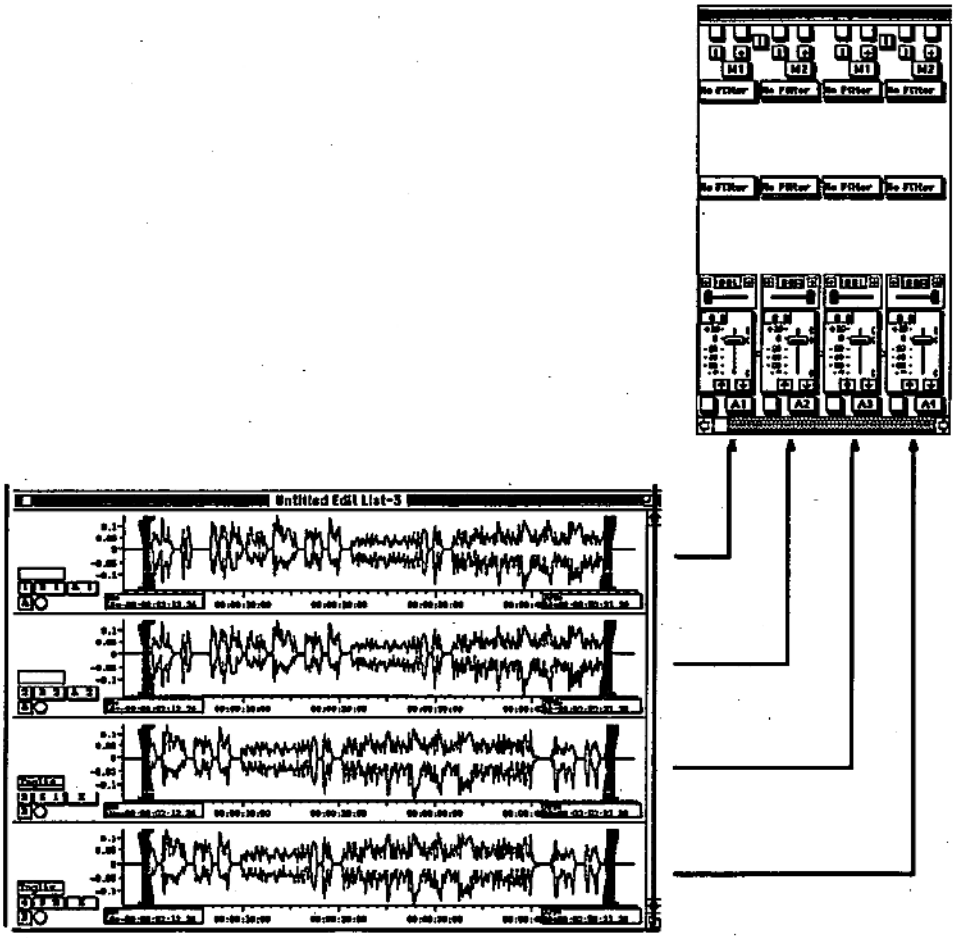


FIG. 6-6: Each panel of an Edit List is assigned to one of four Audition Channels. In turn, each Audition channel is assigned to one of the channel strips on the Mixing Desk.

Multichannel Playback

It is simple to map four panels to four Audition Channels, but what happens when more playback channels are needed?

The SonicStation is a *multichannel* system. Even though it has only two audio inputs and outputs, many tracks may be assembled internally and played at the same time. The limitation is not the number of panels that can play, but the number of *simultaneous audio channels* that can be played at once.

For multichannel playback, more than one sound panel can be assigned to each Audition Channel and, hence, to each of the Mixing Desk's channel strips. There is no limit on the number of panels that can be assigned to an Audition Channel, but there is a limit on the number of panels with active audio that can sound at once on a single Audition Channel. In the basic SonicStation, that number is 2.

> **IMPORTANT!** Each Audition Channel can accommodate two, *but no more than two,* channels of audio playing at once. More panels can be assigned to one channel, but if more than two sound at once, the additional panels are not heard.

The SonicStation is able to play back eight simultaneous channels of sound, two for each of the four Audition Channels.

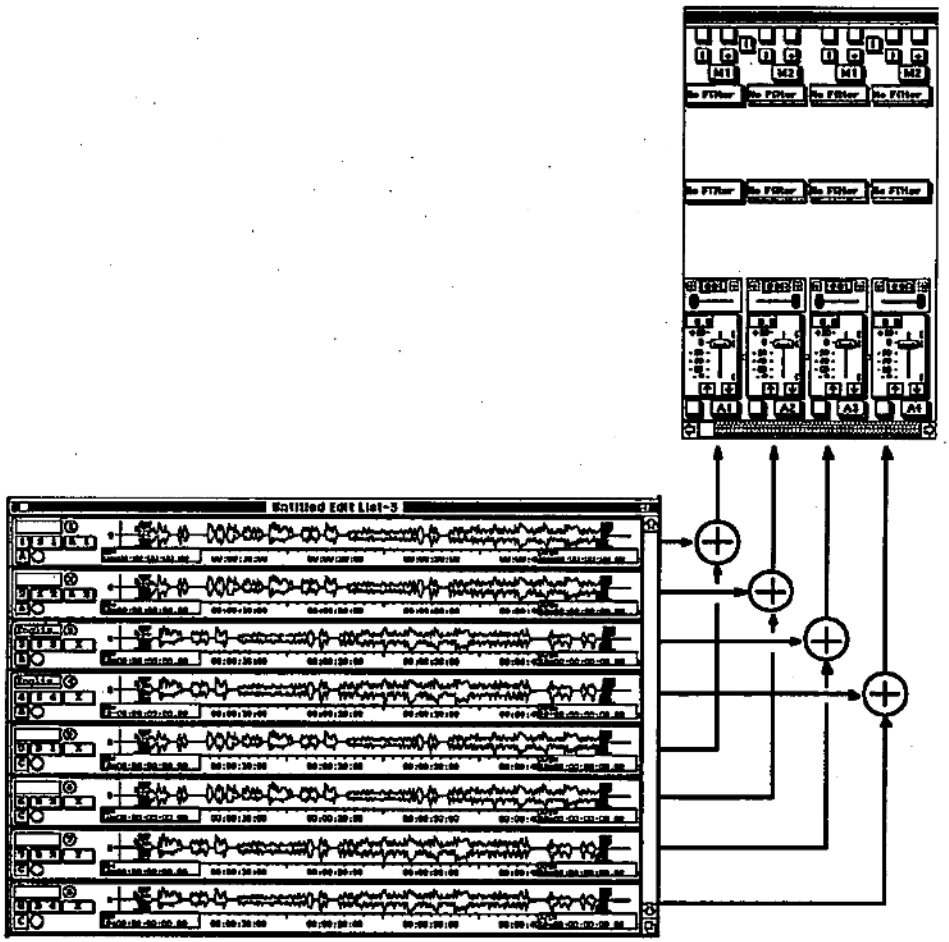


FIG. 6-7: When more than one panel is assigned to an Audition Channel, they are summed together.

This is not the same, however, as playing back eight panels. If there is no sound in a panel, it does not count against the maximum of two active audio channels per Audition Channel.

On the other hand, a single panel may have crossfades between different sound Segments, or the Segments my be made to overlap. When this occurs, the single panel actually plays two different audio channels temporarily. During that time, the Audition Channel to which the panel is assigned is completely occupied, and no other panels may sound on that channel.

Thus, the SonicStation can play exactly eight panels that have continuous audio, without crossfades, from one end to another. Gaps in the panels increase the possible number of panels that can play, but crossfades and overlapping Segments *decrease* that number.

II. The Play Menu

Besides playback with the Space Bar or the Transport Panel, a group of menu commands is provided to trigger playback of any desired piece of audio within an Edit List.

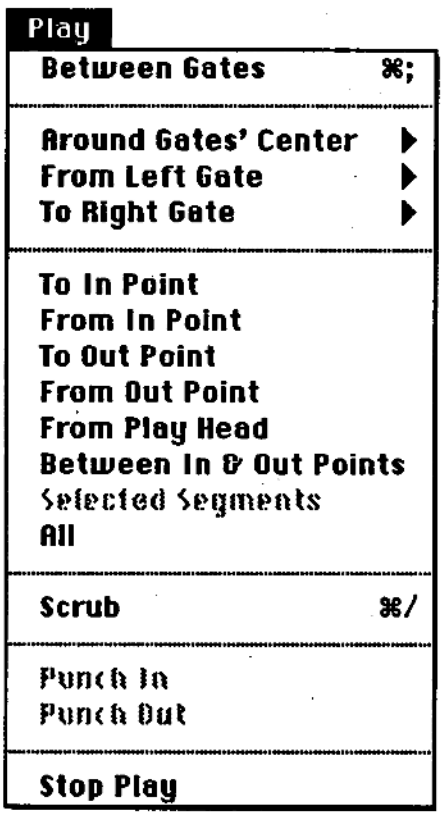


FIG. 6-8: **The Play menu includes commands to trigger playback in any fashion desired.**

Playback in Relation to the Left and Right Gates

There are several ways to key playback from different locations. In editing, the Left and Right Gates are the primary means of marking a region of audio to be worked on, so it is important to be able to hear where the Gates are being placed.

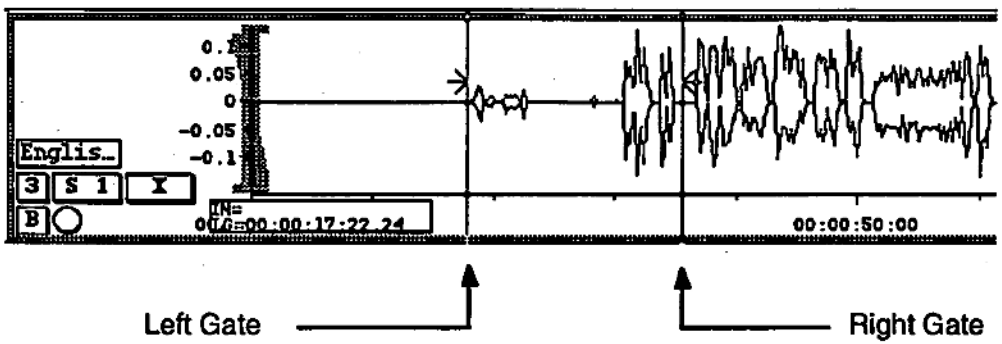


FIG. 6-9: The Left and Right Gates are used to reference a section of a panel for playback as well as editing.

Four of the commands in the **Play** menu use the Gates to define the starting and ending points of playback.

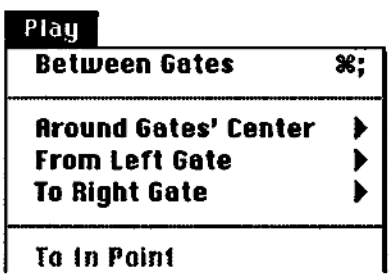


FIG. 6-10: Several of the Play Menu commands use the Gates as their reference point.

This command plays exactly from the Left Gate up to the Right Gate, or from the left edge of the panel to the right edge if the Gates are not visible. Note the command-key equivalent, **⌘-Semicolon (;)**. This makes if fast and easy to execute the commands without having to use the menus.

Plays a section of audio before and after the exact center of the area framed by the Left and Right Gates. The length of the audio segment that is played is defined in a pull-right menu. The user must choose one of these by pulling the mouse to the right after the main menu appears.

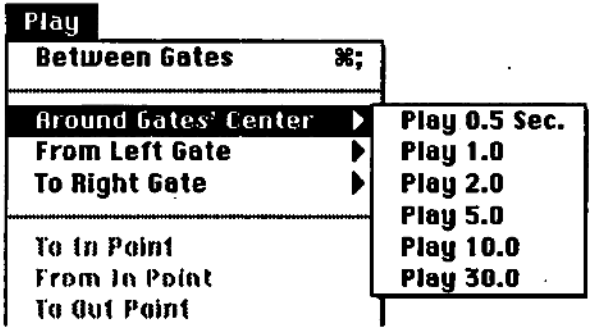


FIG. 6-11: The Around Gates' Center command has several options that define the length of time that will play.

The starting point of playback precedes the center point between Gates by exactly one half of the specified play time.

Play
From Left Gate ▶

Plays from the Left Gate for the amount of time specified in the pull-right menu.

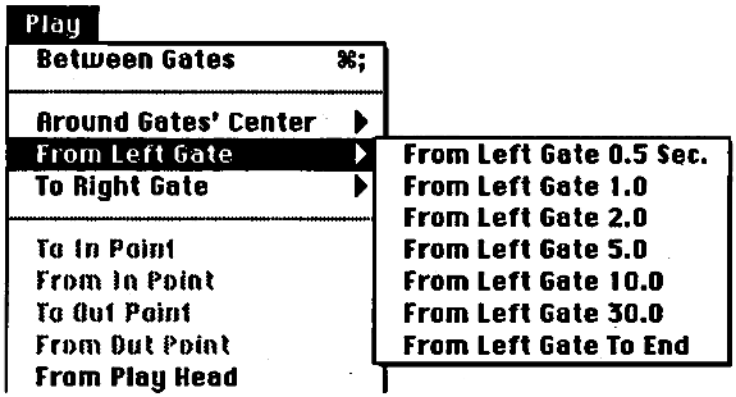
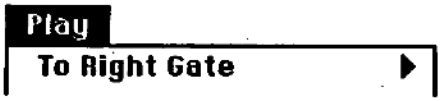


FIG. 6-12: The command (Play) From Left Gate also uses a pull-right menu to specify the length of playback.

Note that this command includes the option of playing all the way to the end of the Edit List.



With this command, the end point of playback remains constant, but the beginning point is changed by the pull-right menu.

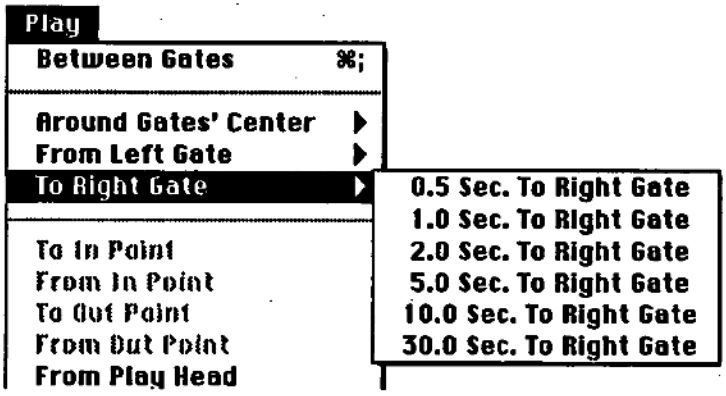


FIG. 6-13: With (Play) To Right Gate, the end point remains constant while the starting point shifts.

The pull-right menu has the same selections as for **From Left Gate** except that there is no equivalent for the **From Left Gate to End** option.

QuicKeys™ and the Play Commands

For the playback commands in general, key equivalents are extremely useful. However, there are simply too many different commands to support with permanent key equivalents. Of the gate-referenced play commands, only **Play Between Gates** has a command-key equivalent (⌘-Semicolon) permanently installed.

For the play commands, only **Play Between Gates** (in most of its variants) and **All** (discussed later) have key equivalents in the standard QuicKeys Keyset provided. In many cases, the user may want to use a command, such as a particular variant of **To Right Gate** to adjust an edit point with precision.

For such a case, it is a simple matter to temporarily or permanently modify the assignments in QuicKeys to add a new keystroke set to select the menu item desired. Refer to the QuicKeys manual for details. SonicStation users are encouraged to become familiar with the procedures of creating these key assignments. The procedure is easy and once mastered, it provides a significant boost in productivity.

Playback Referenced to the In and Out Points

If In and/or Out points are set in the currently selected panel, another group of commands from the **Play** menu may be used to play audio, using these points as reference.

To In Point
From In Point
To Out Point
From Out Point
From Play Head
Between In & Out Points
All

FIG. 6-14: The commands in the second section of the Play menu mostly reference the In and Out points.

Unlike the play commands that use the Gates as reference points, these commands do not use pull-right menus to determine the length of time before or after the designated point. Instead, this is determined by one of the items in the **Audition** section of the **Edit List Preferences**.

To change the length of play around an edit (In or Out) point

- **Open Edit List Prefs... from the File menu's Preferences item.**
- **In the Audition section of EDL Preferences, change the values in the fields Before/After In Point and Before/After Out.**
- **Close the window to activate the new settings.**

This makes it less convenient to select a different length for the audition, but faster to select the desired commands from the menu.

Play

To In Point
From In Point

These commands trigger playback starting from or leading up to, the In Point. The length of time before or after the Edit Point is determined by the **Audition** section of **EDL Preferences.**

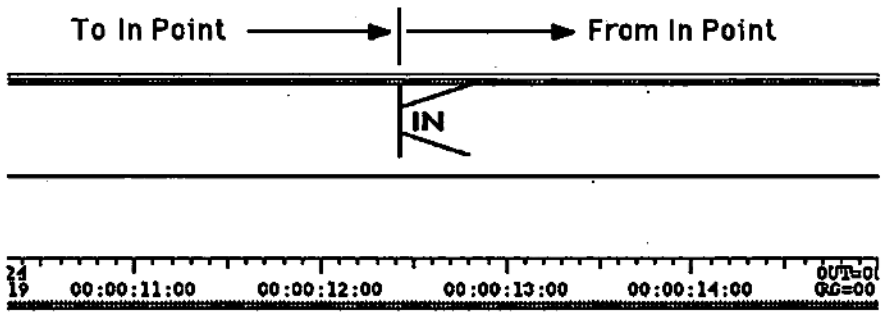


FIG. 6-15: To In Point and From In Point reference the In point in the currently selected panel.

If there is no In point in the currently selected panel, these commands are not available.

Play

To Out Point
From Out Point

These commands behave exactly the same as **To In Point** and **To Out Point**, except that they use the Out point as a reference.

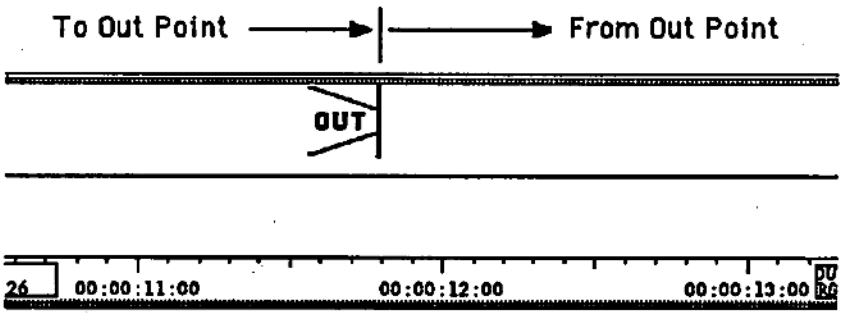


FIG. 6-16: The To/From Out Point commands work the same as the commands that reference the In point.

The same rules apply concerning the length of time that plays before or after the Edit Point and disabling the command if no Out point is present in the selected panel.

Play

Between In & Out Points
From Out Point

This command plays from the In point to the Out point.

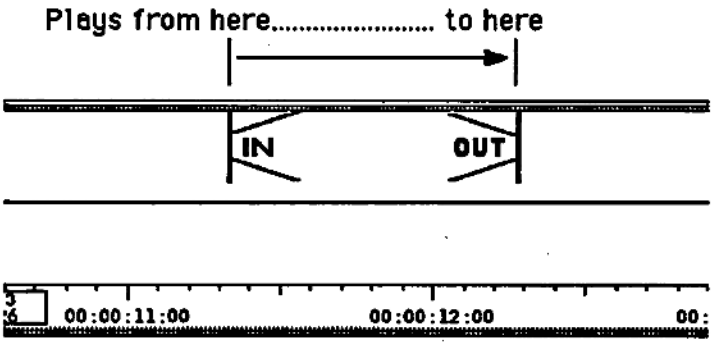


FIG. 6-17: The command Between In & Out Points **plays from the In point to the Out point.**

This command is similar to the command **Between Gates**, discussed earlier, except that it uses the In and Out points instead of the Gates to reference playback.

Play

From Play Head

This command commences playback from the current location of the Play Head. This is the point at which the last playback was stopped.

NOTE: In the current software version, the graphic Play Head disappears when playback stops. The only way to know where playback will begin in response to **From Play Head** is to look in the Current Location display in the Transport Panel.

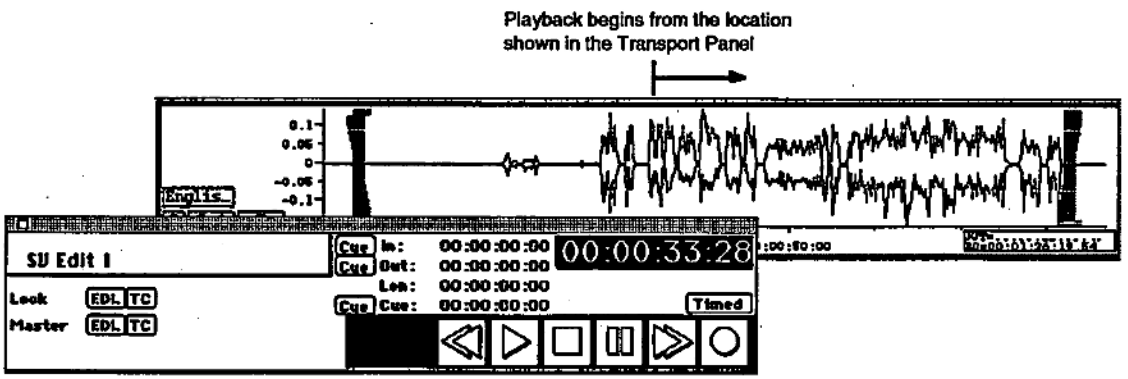


FIG. 6-18: The command From Play Head uses the current location, as displayed in the Transport Panel, as a starting point.

This is exactly the same as pressing the letter "C" on the Macintosh keyboard.

Play

All

The **All** command in the **Play** menu starts playback from the very beginning of the selected panel (and other panels in the same Sync Group) and continues playback until the end of the panel is reached.

Scrubbing

The Scrub function provides variable-speed bi-directional auditioning under mouse control. The vertical and horizontal movement of the mouse is translated into commands for speed, direction and resolution or "throw." Both jogging and shuttling are provided This process is familiar to tape editors, and is known by the terms "Scrubbing" or "Reel-Rocking."

To activate scrubbing:

- **Select Scrub from the Play menu.**

OR **Press ⌘-Slash (/)**

Any playback in progress ceases immediately, and the selected panel displays a circular emblem with an "S" or "J" in it in its left hand area. The initial default is "S" for "Shuttle"

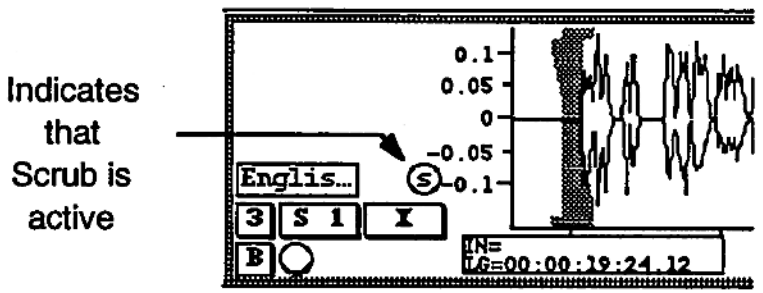


FIG. 6-19: The small circle with an "S" (Shuttle) or a "J" (Jog) indicates that audio Scrub is active in one of its two modes.

To exit the Scrub mode:

- **Press ⌘-Slash (/) again**

NOTE: Most regular editing operations are disabled while Scrub is in effect because dragging of the mouse is dedicated to scrubbing.

Shuttle Mode

With the Scrub indicator visible in the panel, all that is necessary is to drag the mouse (with the button held down) from left to right.

In the default (Shuttle) mode, the "Play Head, " the small triangle that appears along the top edge of a panel during play, is seen to move slowly left or right in response to the position of the mouse. At the same time, audio is heard at a speed proportional to the speed of the point motion.

The speed of play changes with the left-right position of the mouse, varying from half-speed backwards at the left edge of the screen to full-speed forward at the right edge. By moving the mouse left and right while listening to the audio, a desired point in audio can be located with great precision.

When the desired point is reached, the mouse is released to freeze the Play Head. The point can then be marked as an Edit (In or Out) Point using the appropriate command from the **Mark** menu, or command keys (⌘- Left Bracket or ⌘- Right Bracket). Other types of edit marks (Track Start, End, etc.) can also be used, using the menu commands or QuicKeys key equivalents.

Jog Mode

Jogging emulates the action of holding on to both reels of an analog tape machine and rocking the tape past the Play Head.

<u>To change from Shuttle mode to Jog mode (and back again):</u>

- **Click the Scrub indicator emblem (the small circle). The letter inside the circle flips from "S" to "J" in response.**
- **Click again to return to Shuttle mode.**

In the Jog mode, the Play Head moves in small increments in response to the mouse's *motion,* as opposed to its position. The rate of play is determine by the rate of mouse motion.

For jogging, the resolution (or "throw") refers to how much time is auditioned within the confines of the Panel. An analogy from the analog world would be small (1") or large (8") lengths of tape being scrubbed past a play head. That is, how much the reels are moved in either direction. The throw is controlled by the vertical position of the mouse cursor in the Panel that the click–drag occurs.

Scrub Preferences

The Scrub function is controlled by six parameters. These parameters are adjusted from section called **Scrubbing** in the **EDL Preferences** dialog.

Scrubbing Preferences

Smoothing Threshold:	1.0000
Minimum Smoothing:	0.150
Maximum Smoothing:	0.900
Rate Multiplier:	12.000
Low-speed Gain (dB):	12.042
Maximum Speed:	1.000
Startup Mode:	○ Jog ◉ Shuttle
Scrub Gain:	○ Enable ◉ Disable

FIG. 6-20: **Scrubbing Preferences affect the dynamics of mouse motion versus play speed.**

Smoothing Threshold, **Minimum Smoothing**, and **Maximum Smoothing** apply only to Jog mode, while **Low-Speed Gain** and **Maximum Speed** apply primarily to Shuttle.

Smoothing Threshold

Range — 0 to 60 (dimensionless)

Smoothing is used to compensate for the discontinuous nature of updating and reporting the mouse location. As you move the mouse, it's position is periodically detected and sent to the Sonic System. You can move the mouse and cursor faster than it's position can be reported. This setting controls the break point (threshold) between **Minimum Smoothing** and **Maximum Smoothing** regions.

Minimum Smoothing

Range 0 to 0.99 (dimensionless)

This setting can be thought of as low-speed smoothing. The **Minimum Smoothing** setting is used to average the incoming location values for play speeds from stop to the **Smoothing Threshold**. At low play speeds, more smoothing is needed than at high speeds. A value of 0.15 is nominal.

Maximum Smoothing

Range — 0 to 0.99 (dimensionless)

This setting can be thought of as normal-speed smoothing. The **Maximum Smoothing** setting is used to average the incoming location values for play speeds from the **Smoothing Threshold** to **Maximum Speed**. A value of 0.9 is nominal.

Rate Multiplier

Range — 5 to 25 (dimensionless)

The **Rate Multiplier** represents conversion from number of screen pixels to feet per second. The mouse position is normalized (converted) to a value between 0 and 1. The normalized value is then multiplied by the **Rate Multiplier** value.

A setting of 25 is very unstable, sometimes causing the Sonic System to play backwards even though the mouse is in the right half of the Panel. A setting of 5 produces very sluggish response to mouse movements.

Low-speed Gain (dB)

Range — 0 to 12.042 dB

This setting controls the gain at zero play speed or stop. The Sonic System will output a DC value which is the sample value at the play pointer times the **Low-Speed Gain** value. As play speed increases from stop, the gain decreases linearly, reaching 1 when the play speed is at the **Smoothing Threshold**. High values of **Low-speed Gain** can produce saturation with large amplitude samples.

Maximum Speed

Range — 0.5 to 1.0 playback, real time

Maximum Speed is the rate of play reached when the mouse cursor is at the right edge of the Macintosh screen while in Shuttle mode. The legal values for this parameter are from 0 to 1. Note that values of less than 0.5 results in extremely slow play. A value of 0 means that the scrub does not take effect at all.

The diagram below illustrates the interplay between **Smoothing Threshold**, **Max/Min Smoothing**, **Low-speed Gain** and play speed.

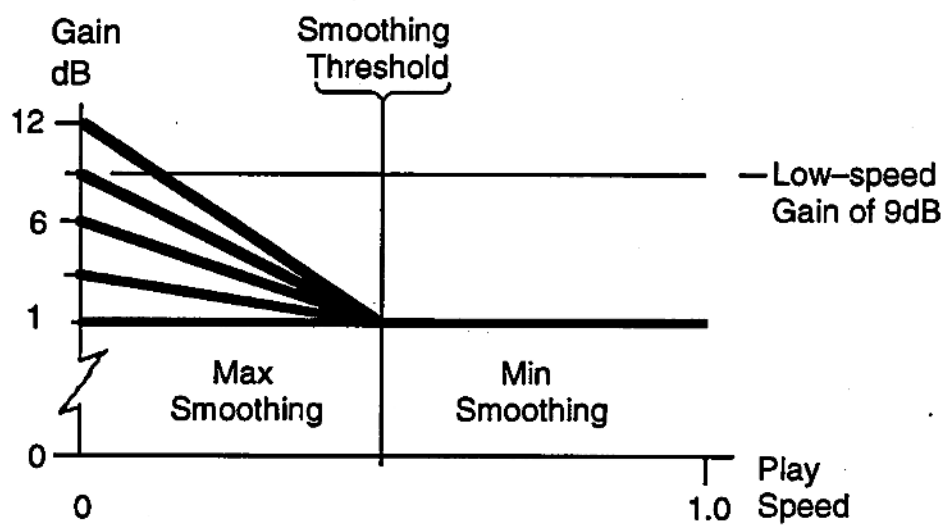


FIG. 6-21: The amounts of Low-speed Gain and Smoothing (in Jog mode) are determined by play speed in relation to the corresponding Scrub parameters.

The five curves show the effect of **Low-speed Gain** settings from 0 to 12 dB in 3 dB increments. The vertical dotted line indicates an arbitrary **Smoothing Threshold** setting. As the setting is changed, the threshold would shift left or right on the graph.

Startup Mode: ○ **Jog** ◉ **Shuttle**

Determines the default mode for Scrubbing. The initial default is Shuttle, in which the scrub acts like a low-speed play. In jog mode, play corresponds to *motion* of the mouse, rather than position, and is similar to rocking tape reels on an analog tape transport.

Scrub Gain: ○ **Enable** ◉ **Disable**

Switches the **Low-speed Gain** on or off. With **Scrub Gain** disabled, the gain remains flat at all scrub rates.

III. Recording and Playing Back Simultaneously

The SonicStation has the audio processing power and disk transfer bandwidth to record audio at the same time that another Sound File is playing from the disk. This can be used to do operations that require both activities simultaneously. In some cases, the playback and recording are synchronized.

Simultaneous playback/record is use for:

- **Background Recording** - In which audio is recorded while editing and monitoring are being done in the *foreground*, that is, from the SonicStation screen.

- **Punch-in and Punch Out** - While playing back from an Edit List, the user can start recording at a precise designated spot, and insert the recorded audio automatically at that point in the list.

- **Capture from the Mixing Desk** - By re-recording sound as it is played through the Mixing Desk, the user can mix and process sound right on the SonicStation, and reduce a complex editing sequence into a continuous Sound File.

Background Recording

Once a recording has been launched, it proceeds normally so long as the Record Sound File window remains open, or until explicitly terminated. Other windows (such as Edit List) may be opened over the Record window, and all play commands function normally.

NOTE: Background recording consumes some of the Audition Channels (See Chapter 4) that are used for multichannel playback. For this reason, fewer channels can be played while a record is in progress. Other play operations continue normally.

To use Background Recording:

- **Start a recording in the normal manner.**
- **Without closing the Record window, open an Edit List, create a new List, or bring one that is open to the front.**
- **Edit and play sound normally.**
- **To terminate recording, use the Transport Panel.**

NOTE: It is a good idea to pre-allocate record time when sound-loading is to be done in the background. That way, if the user forgets to terminate the recording when the source material finishes, the system will do take care of it.

Punch-In and Punch-Out

The SonicStation is capable of "punching-in" to record while an Edit List is playing. The resulting Sound File may be optionally inserted into the (stereo) Destination panels automatically.

To perform a punch-in to an Edit List:

This procedure presumes that the Edit List that will be "punched" into is active, with the Destination panels set as desired.

- **Set up to record by selecting New Sound File, Record a Sound File or by clicking the Transport Panel's Record button.**
- **Click the Record prefs button in the Record Sound File dialog.**
- **In the Record preferences dialog, set channels 1 and 2 to "Ready."**
- **Check the box for "Mount Files after Recording."**

Recording with punch-in creates a new Sound File, separate from the file that is being punched into. The Sound File is recorded with an offset value that matches the time at which the punch-in occurred.

With **Mount after recording** checked, the new Sound File is automatically loaded into the Edit List, just like opening a Sound File from the File menu. In this case, the file is opened with offset, so that if appears in the Edit List in synch with the rest of the tracks.

If **Paste Mounted File** is also checked, the punched in material is automatically inserted into the Destination tracks, so that the punch-in creates a complete and continuous "take," with the new material.

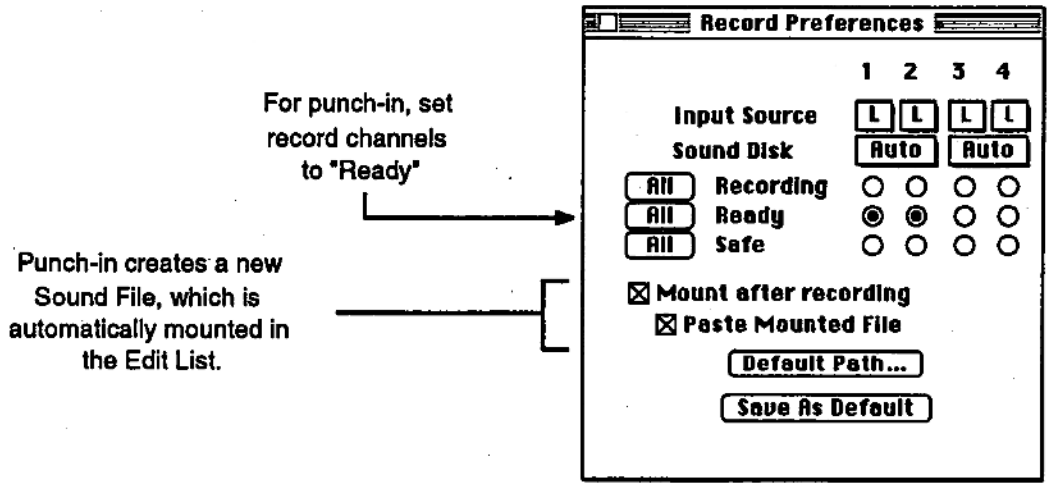


FIG. 6-22: For Punch-In, the recording channels are set to "Ready" and the checkbox for "Mount after recording" is checked.

- **The punch-in has been set up. Close Record Preferences.**
- **Click the Transport Panel's Pause button.**

The active Edit List begins to play.

- **Click the Transport Panel's Record button to go into record.**

Monitoring automatically switches from the Mixing Desk outputs to Line Inputs.

- **Click the Record button again to exit recording and terminate playback.**

The **Completing Recording** dialog boxes will appear. Once they have completed their cycle, the new Sound File will be opened into the Edit List, according to the setting of the checkboxes in **Record Preferences**.

Automated ("Timed") Punch-In

The Transport Panel has a small button at the right of the panel and just above the Transport Controls. When this button is set, punch-in and punch-out are performed automatically, using the times entered in the **In** and **Out** cue fields.

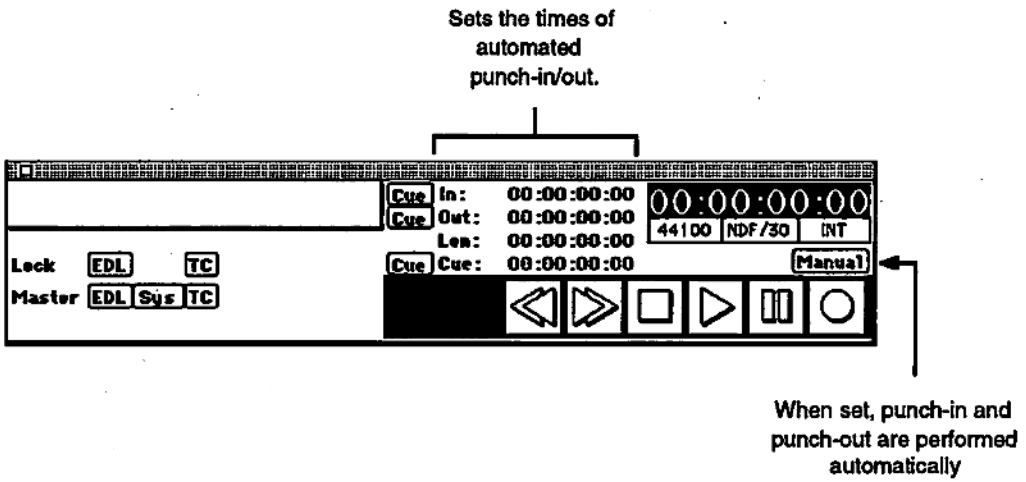


FIG. 6-23: The Transport Panel controls timed, as well as manual, punch-in and punch-out.

The procedure of setting up for timed punching is the same as for manual operation. When the punch is executed, the system automatically switches the monitoring. Recording and playback terminate as soon as punch-out occurs.

Capture from Desk

As discussed in the preceding chapter, the SonicStation is capable of recording its own output, providing an easy way to "capture" a complete Edit List, with numerous edits, to a new Sound File. This also captures the mix, with any filtering or changes in level. When doing complex editing, capturing from the desk is a powerful technique to prevent the complexity from overwhelming the user.

Up to four channels may be captured.

To capture an Edit List.

- **Select New Sound File or Record Sound File as you would to begin a new recording.**
- **Click the Record Prefs... button in the Record Sound File dialog**
- **In the Record Preferences dialog, set the Input Source for the channels you want to record to M1, 2, 3, or 4. This assigns each channel to record the output of the Desk on the designated Mix buss.**
- **Press the Pause button in the Transport Panel to begin recording. After the record files are set up, recording begins and the Edit List begins to play normally.**
- **Use the Mixing Desk to do any necessary real-time changes in level or equalization.**
- **The recording will terminate normally at the end of the Edit List's playback. The resulting Sound File can then be opened in the usual fashion.**

> NOTE: When capturing, the number of channels available to play is reduced by the number of channels being recorded. Be aware of this especially, if you are trying to capture a multichannel schedule.

Summary

The SonicStation provides a variety of ways to play audio, the easiest way in many situation being to use the keyboard Space Bar, the "C" and "V" keys, or the Transport Panel's **Play** button.

The **Play** menu provides a multiplicity of ways to trigger playback of defined sections of the Edit List. During playback, Edit Points (In or Out) and other edit markers can be dropped into the Edit List using menu commands, command-key equivalents, or QuicKeys key equivalents.

Because the SonicStation is able to play while recording, a recording can be started and then continued in the "background" while other editing work proceeds in the foreground. It is possible to set the SonicStation to drop into (and out of) record during playback, either manually or at predetermined "In" and "Out" points. The resulting Sound Files will open in synch with the original Edit List.

An Edit List of some number of channels can be "captured" as a new, seamless Sound File along with any mixing or equalization desired. This can greatly simplify complex editing projects.

Chapter 7

The Edit Display

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Introduction

Editing on the SonicStation uses a display that gives a visual representation of audio and editing information. In the Waveform display, audio is represented by a graphic display of actual audio samples. The user can zoom in or out to as much or as little of the display as desired, and can view any desired area of the waveform.

Edits are set up and executed using graphic markers placed using the Macintosh mouse and keyboard. Finished edits are depicted by crossfade markers that indicate each cut and the duration of the fade used.

The SonicStation's editing display screen facilitates elegant mono, stereo or multitrack editing. The Waveform display panel conveys information in a format that is powerful and easy to use.

Waveform display is the SonicStation's default and native mode, but audio and editing information can also be displayed in several other useful forms. Depending on the application and the user, one or another of these modes may be found to be most useful at any given time. The SonicStation editing display gives you the flexibility to freely combine different views of audio and editing information.

I. The Display Panel

As described in earlier chapters, an edit display can be opened by selecting **New Edit List** (to start an Edit List from scratch) or **Open Edit List** (to work on an existing List).

The edit display that appears has some number of waveform (or text) *panels*. If it is a new Edit List, all panels start out empty of audio.

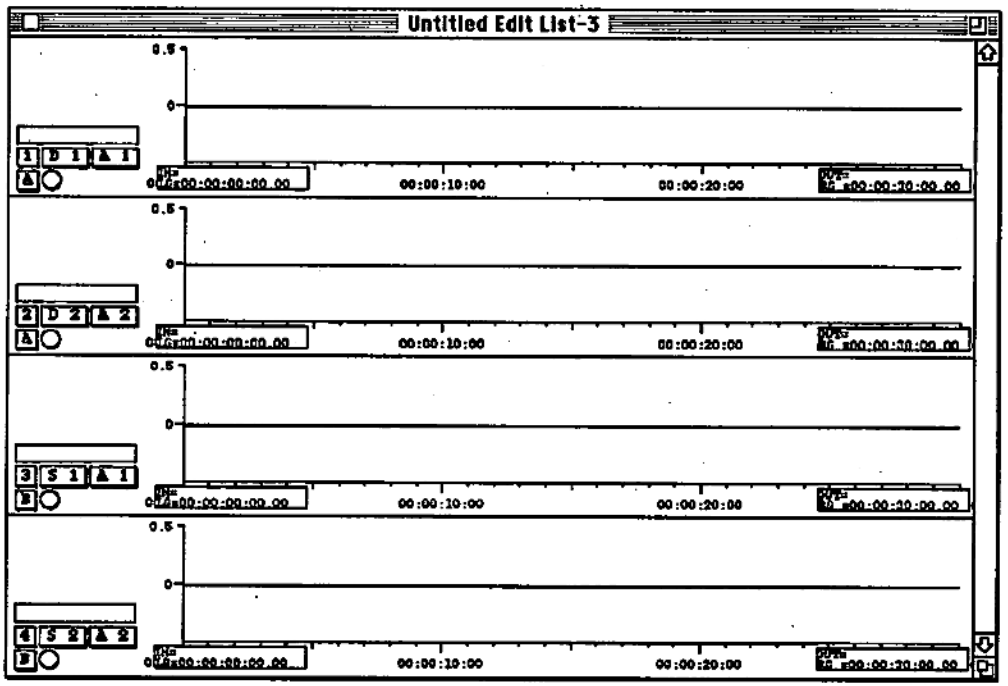


FIG. 7-1: When a new Edit List is created, all panels start out empty of audio.

The number of panels initially created for a new Edit List can be set by the user. The initial default opens the Edit List with four panels, a configuration well-suited for editing stereo material.

Panel Elements

A *panel* is a sort of virtual window in which any *track* of audio may be viewed. Each waveform panel carries a graphic or text display of a single audio channel. A panel shows a visual representation of a particular track, and the user chooses which track is viewed through a given panel on the screen. There may be many more tracks (currently up to 64) than are shown on the display screen at any one time.

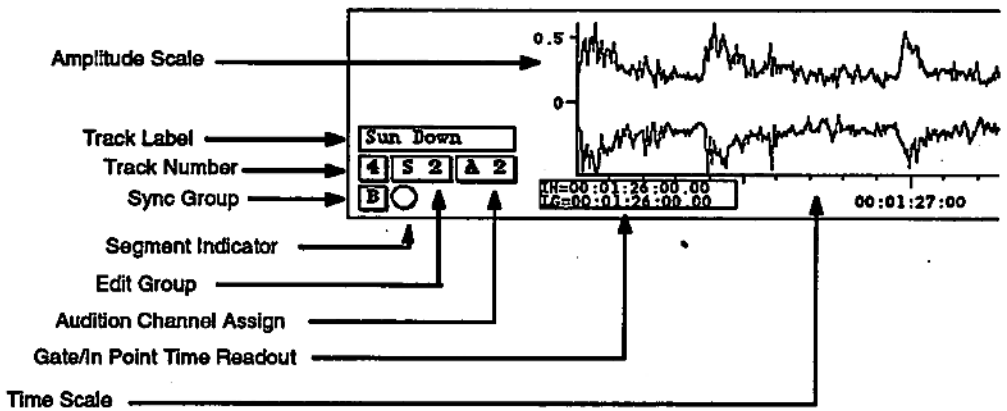
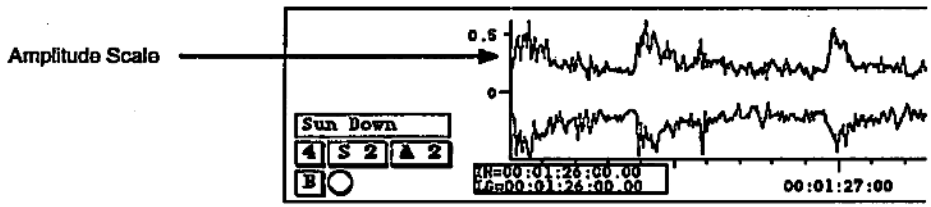


FIG. 7-2: The left-hand portion of a panel has several indicator boxes that are used in editing and controlling the display.

Every panel has a set of labels and indicators at the left of the panel that shows which track the panel is set to view, how that track is grouped with other tracks for editing, and which channel of the Mixing Desk the track's output is assigned to. In every display format except Text, each panel has a vertical scale (typically representing amplitude) and a longer horizontal scale representing time or frequency.

Amplitude Scale



In the **Waveform** and **Frequency Analysis** display formats, the vertical scale of the panel represents amplitude, either of an audio sample or of a particular frequency component.

Amplitudes are displayed on a relative, rather than absolute, scale. Full-level is displayed as a range of +1 to -1. When the display zooms to show a particular section of audio, the display automatically rescales so that the highest amplitude in the section displayed defines the scale. As audio level drops, the **Waveform** display becomes correspondingly more sensitive. This makes even very low-level waveforms perfectly distinct.

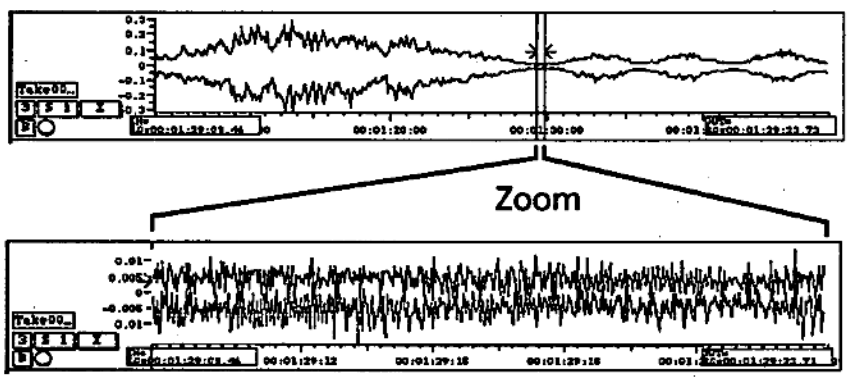


FIG. 7-3: The display's amplitude scales automatically rescales to the highest level currently onscreen. This can produce unexpected results when zooming.

Relative scaling is a powerful feature, but can be confusing if the user is not aware of its effects. The classic example is zooming to an area of "silence" that is actually low-level noise. Where the SonicStation sees this, it rescales the display so that the noise fills the entire vertical scale, making it appear as though the noise were very loud.

When viewing residual noise or very low-level signals, the relative scaling also may cause the waveform to appear highly "squared-off." This simply means that you are viewing audio at such a low level that very few bits of resolution are available.

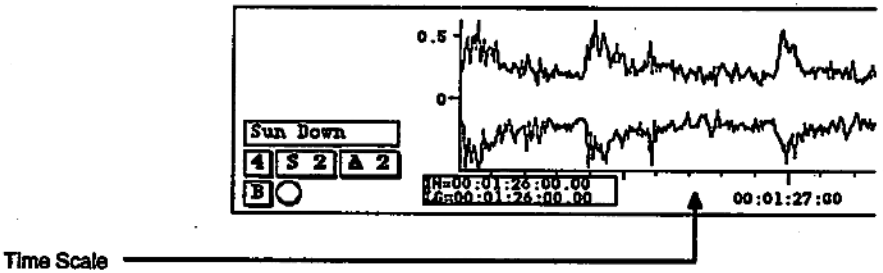
When comparing levels between two panels, or zooming into different points in a waveform, be aware that the system is changing the waveform scaling as you move.

SonicStation Amplitude Scale	Level in Decibels (dB)
1	0
0.5	-6
0.316	-10
0.25	-12
0.2	-14
0.125	-18
0.1	-20
0.01	-40

FIG. 7-4: Amplitude scale versus decibel relationships

Because of the automatic re–scaling feature of the SonicStation's amplitude display, a linear scale is used as opposed to a logarithmic scale.

Horizontal (Time) Scale

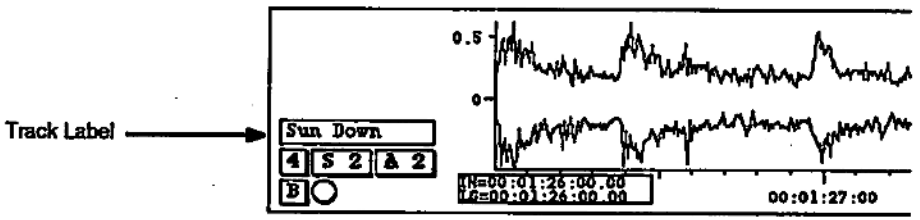


The horizontal scale along the bottom of the panel serves the critical function of showing the exact time in the **Waveform** and **Bar** display formats, and a frequency point when using the Frequeny Analysis display. Time is shown in decimal seconds, samples or SMPTE/EBU time code. The Time Scale uses the format specified under **Display Time As** in the **Edit List Preferences.** (See Chapter 5 for a discussion of the different time display formats available on the SonicStation.)

In the Frequency Analysis display format, the horizontal scale represents frequency in Hertz from 0 to one-half the current sampling rate (22.5 kHz or 24 kHz, corresponding to 44.1 or 48 kHz sample rates).

> **NOTE:** The SonicStation can simultaneously display several panels with different horizontal scales. As with the amplitude scale, this can sometimes cause confusion. In such cases, it can be helpful to select all panels and zoom or move, so that all panels show the exact same area of audio.

Track Label



An Edit List has some number of tracks in which audio is assembled. Each track has a text label associated with it, entered by the user.

To set the Track Label:

- **Select the desired panel, if not already selected, by clicking it.**
- **Option-double-click the panel's label field.**

This brings up a dialog to enter a new label or change the existing label.

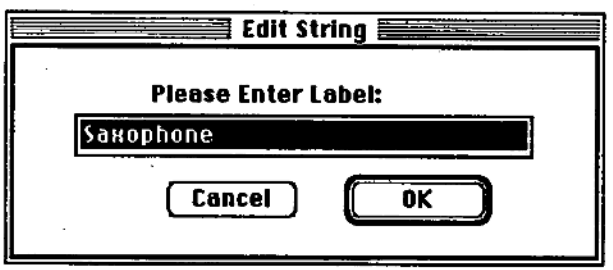
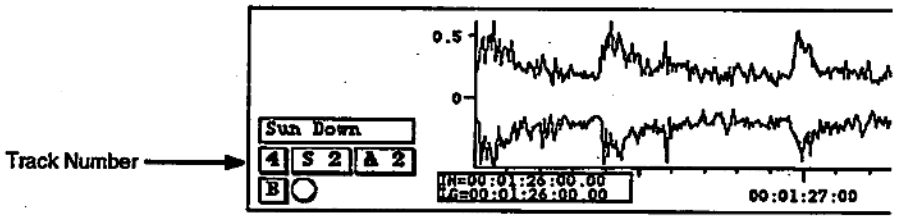


FIG. 7-5: Option-double-click the Track Label field to bring up the Edit String dialog.

Up to 30 characters may be entered, but only the first twelve characters are shown in tthe display panel's Track Label field. When a Sound File is opened into a panel, the name of the file is inserted in the Track Label field.

Track Number



The Track Number indicates the Track currently displayed in that panel. The user has the option of changing the Track Number to bring a different track into the panel.

<u>To change a panel's Track Number so as to display another track in the Edit List:</u>

- **Click-hold on the Track Number box of the selected panel.**

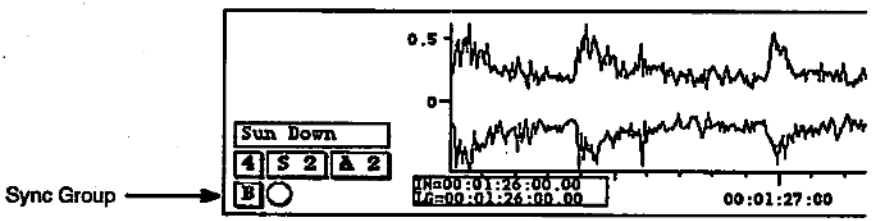
This brings up a "pop-up" menu that lists all of the tracks currently available.

- **Select the track desired and release the mouse.**

The display in the affected panel (as well as those in other panels that are assigned to the same Sync or Edit Group) changes to show the selected track(s).

> NOTE: To avoid splitting members of the same editing group across the display, it is a good idea to change the Track Number *only* on the uppermost member of a Sync Group, and to change these *only* to other track numbers that are also the uppermost tracks of their Sync Group.

Sync Group



The SonicStation "gangs" tracks together by the use of Sync Groups. Sync Groups apply to the operations of:

- **Assigning Edit Groups.** When a panel is designated as Source or Destination, all other panels showing tracks of that Sync Group change.

- **Playback.** When a play command is issued by hitting the space bar, using the Transport Panel, or using the **Play** menu, the track in the selected panel and all others in its Sync Group play. (By holding down the Shift key while pressing the Space Bar, the grouping is overridden and the system plays *only* the selected panels.)

- **Editing.** Most editing operations apply primarily to the Edit Group. If a track that is selected as a target belongs to no Edit Group, the edit operation applies to the target track's Sync Group instead.

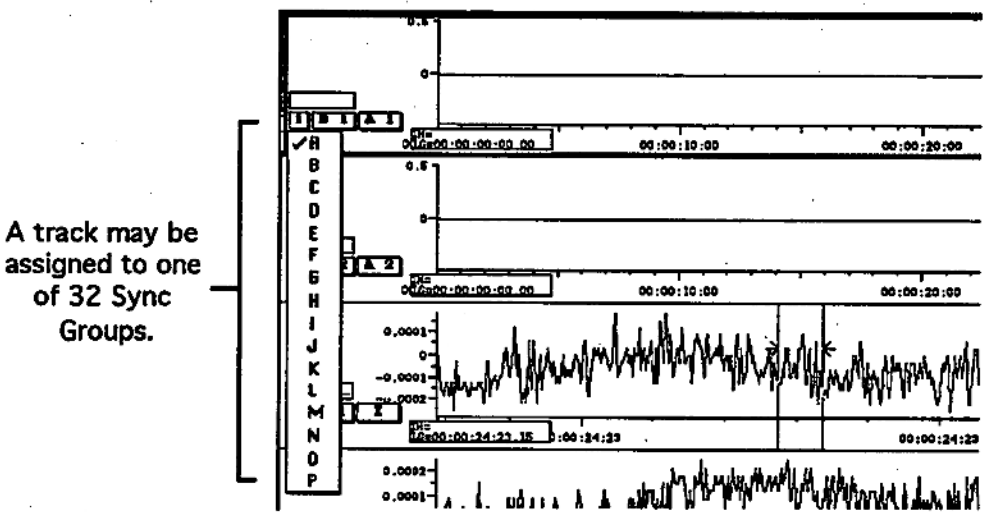


FIG. 7-6: Sync Groups apply to all Zoom and Move operations, as well as selection of Edit Groups.

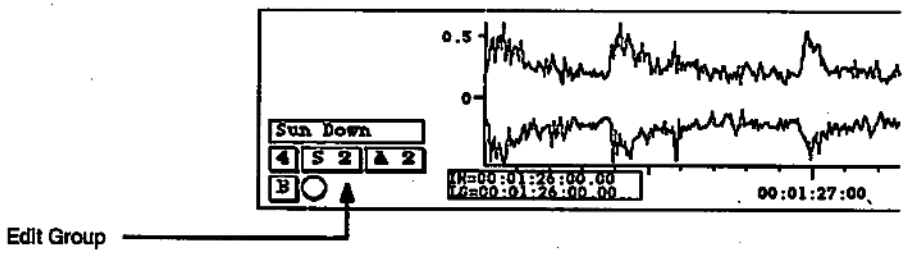
Sync Groups are designated by letters (A-P, both upper and lower case), yielding 32 possible groups.

<u>To change a track's Sync Group :</u>

- **Select the panel and click-hold on the Sync Group box.**
- **Select the desired group from the list that appears.**

In the initial default configuration of the SonicStation edit display, Panels 1 and 2 are assigned in Sync Group A, while Panels 3 and 4 are assigned to Group B. This configuration has been found to be most optimal for editing stereo material. This initial assignment can be changed by the user as desired.

The Edit Group



Panels may be assigned to one of two Edit Groups. The editing commands **Insert**, **Insert & Ripple**, **Delete**, and **Delete & Ripple** (discussed at length in Chapter 9), use Source and Destination panels to determine where audio is moved from and to.

The **Insert** and **Insert & Ripple** commands move a section of audio (designated by In and Out point markers) from the Source panel(s) and place those sections at similarly designated points in the Destination panel or panels.

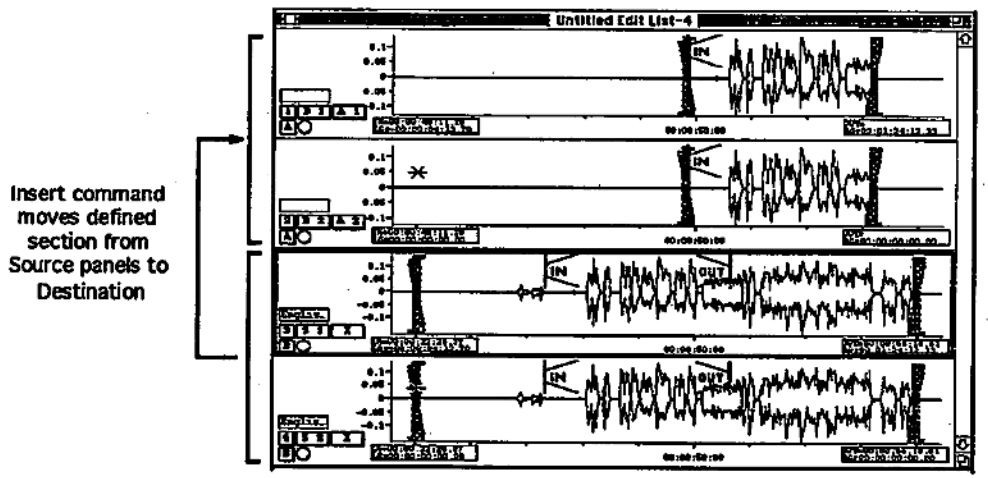


FIG. 7-7: An Insert command moves sections of stereo audio from the Source panels to a pair of Destination panels in the upper portion of the screen.

Any panel can be designated as either Source or Destination (as well as None). Panels showing tracks that belong to the same Sync Group are automatically grouped together when the Edit Group is changed.

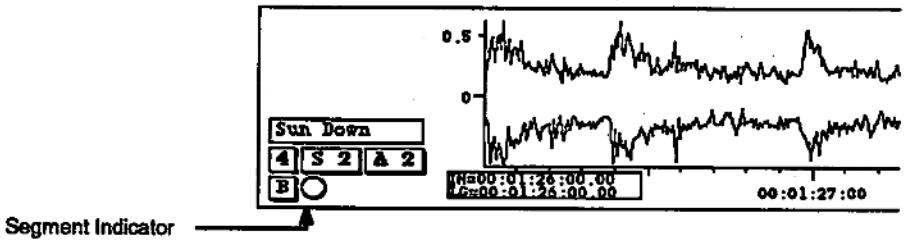
To change a panel's Edit Group:

- **Select the panel to be changed (if not already selected) by clicking it once.**
- **Click-hold on the Edit Group box and select one of the three selections: Source, Destination, or None.**

OR **Select the panel, and hit the "S" key on the Macintosh keyboard for Source, "D" for Destination, or "N" for None.**

The selected panel (and all panels in the same Sync Group) change automatically to the new designation.

Segment Indicator



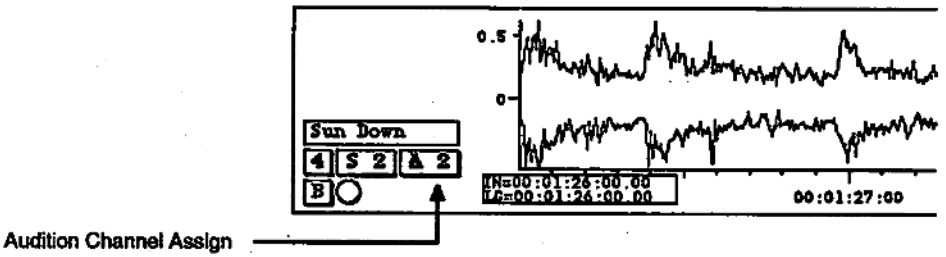
This small circle indicates whether any Segments (described briefly in Chapter 3, and in detail in Chapter 11) are currently selected. This helps to prevent editing mistakes caused by having selected Segments that are not currently visible on the screen. If no Segments are selected in a given panel, the Segment Indicator is blank. When Segments are selected, it fills in with color, blue for Source panels, and yellow for Destinations.

To select or de-select all Segments in a panel:

- **Click-hold on the Segment Indicator.**
- **Choose Select All or De-Select All from the pop-up list.**

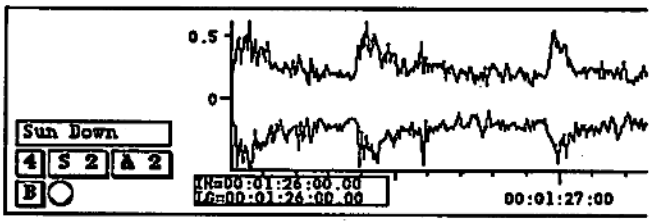
NOTE: The Segment Indicator is not shown if Segment Editing is not enabled in **EDL Preferences** (described later in this chapter).

Audition Channel Assign



Each panel can be assigned to one of four *Audition Channels* coming from the Sound Disk. These in turn may be patched to channels of the Mixing Desk. Chapters 5 and 11 provide detailed discussion of how the Audition Channels work, and how the SonicStation uses these for multichannel playback.

Gate/In Point Time Readout



Gate/In Point Time Readout

Temporary markers called "Gates" are used to identify specific points and regions of audio for editing. When edit points have been identified, they are marked with In and Out points that are used to perform the actual edit.

The location of both of these marks can be seen on the **Waveform** display, but it is often helpful to have a precise position reading for these important markers. The left and right Time Readout boxes provide continuous readout of the Left and Right Gate positions, as well as the In and Out points, at any time.

In the Frequency Analysis display format, a readout of frequency (as indicated by the position of the Left Gate) is found at the left Readout box.

Marks and Indicators

The editing display (in all non-Text formats) uses several types of marks to identify points and features of an Edit List. The use of these graphic devices for editing is described in great detail in Chapters 8 and 9. This discussion is intended to familiarize the user with the appearance and use of each kind of mark.

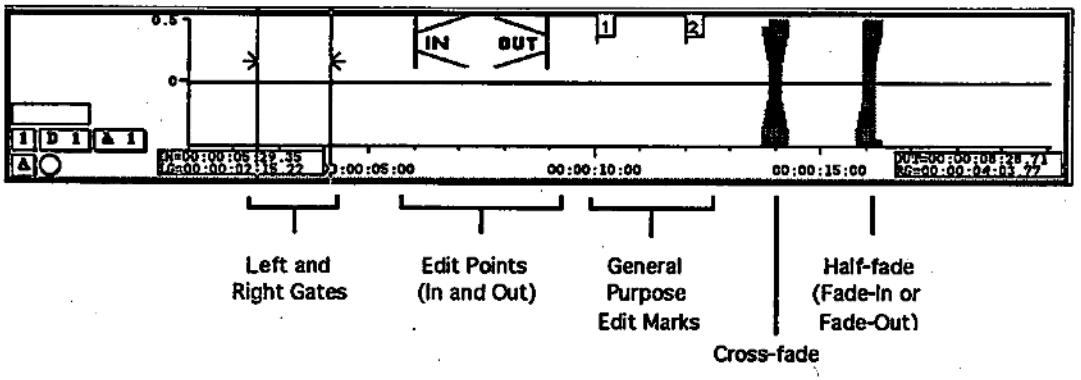


FIG. 7-8: Various types of editing marks are used in the SonicStation display.

Left and Right Gates

Gates are the general-purpose means of indicating locations in the waveform display for navigation and marking. The user places the Left and Right Gates by clicking the panel, or dragging from the left-hand or right-hand side of the display. The user can then place editing marks at the location of the Gates, or to zoom the display to the area framed by the Gates. The Gates may be moved off the display panel by dragging them all the way to the left or right, as seen on the display.

Edit Points (In and Out)

Many of the SonicStation's editing commands use In and Out points to designate sections of sound to be moved, and the place to which they are to be moved. In and Out points can be placed at the points indicated by the Left and Right Gates, or "on the fly" while playing audio.

General Purpose Edit Marks

Marks of several different types can be placed in the panel, including Track Start and Track End for use in CD mastering. The various types of marks have the same general appearance, but are displayed in different colors to aid in distinguishing one type of mark from another.

Cross-fade

When a section of audio is inserted into another, the transition between them is marked by a Cross-fade. The system places this "bow-tie" graphic to identify the location of a splice. The length of the fade and the details of the edit can be changed by the user, and the width of the graphic changes to show the correct fade length. When the fade becomes long in relation to the current zoom level, the bow-tie shape becomes a rectangle with the fade shown as diagonals from corner to corner of the box.

Single fade (Fade In or Fade Out)

When audio is abutted with silence, the SonicStation uses a single fade, or "half-fade," to indicate a fade up from, or down to, silence (also called "digital black"). The Fade In or Fade Out can be changed in the same fashion as a cross-fade.

II. Changing the View

Display Formats

The **EDL** (for "Edit Decision List") menu has several commands that can change the format in which audio is represented in a panel, or the way that panels are shown on the screen.

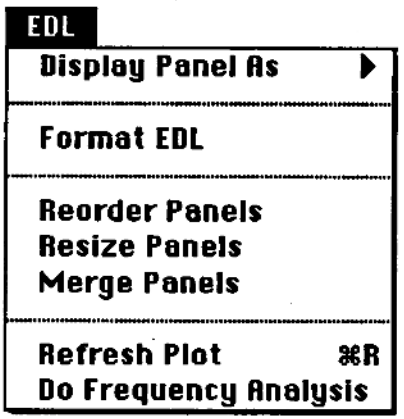


FIG. 7-9: **The EDL menu contains commands that affect the format and arrangement of the editing display.**

The **Waveform** display is the default format for the editing display, but audio and editing information also can be represented as a frequency analysis of a section of audio, as rectangular bars labeled by name, or as a list of audio segments designated by start and end times.

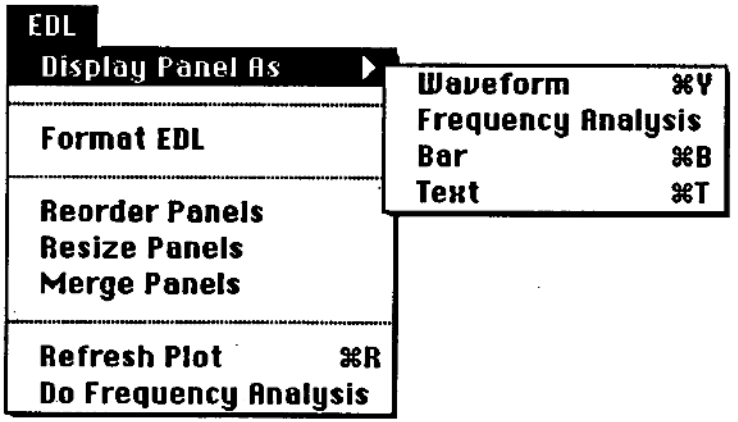


FIG. 7-10: Panels may be shown in any of the four display formats.

To change a panel's display format:

- **Select a display panel by clicking it with the mouse. Hold the Shift or ⌘ keys down while clicking to select multiple panels.**
- **Pull down the EDL menu and select the desired format from the "pull-right" submenu to Display Panel As.**

OR **Use the command-key equivalents to select the desired format.**

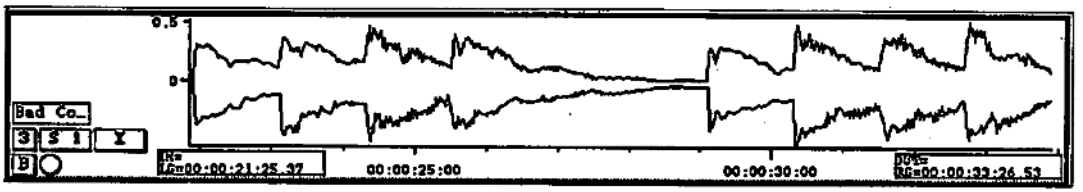
The command-key equivalents for the main display types are:

- ⌘-Y — **Waveform**
- ⌘-T — Text
- ⌘-B — **Bar**

The selected panel(s) change immediately to the new display format.

The display format for each panel in an Edit List is independent of that chosen for other simultaneously shown panels, and it is often useful to change back and forth between different display formats on individual panels. The key equivalents to the display format command provide a quick and easy way to switch between formats.

Waveform Display Format



Waveform is the default display format, and probably the most used. Audio is displayed as a time-versus-amplitude display, showing the absolute amplitude of audio across some period of time. All of the edit marks and navigation (move and zoom) commands are used in editing with the **Waveform** display.

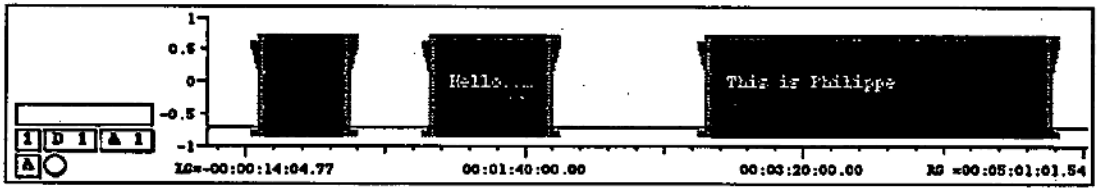
Frequency Analysis Display

The SonicStation has a DSP frequency analysis program built into it. A section of audio can be marked with the Gates (as described later in this section), and broken down into its component frequencies. The resulting analysis is shown when the **Frequency Analysis** display format is selected. In this format, the vertical display scale still represents amplitude, but the horizontal scale shows frequency.

Although the **Frequency Analysis** display cannot be edited, all of the commands for zooming and moving (described in Section IV of this chapter) are active. The display can be resolved to a show a very accurate analysis of the selected section.

Note: The **Frequency Analysis** display is not available until an analysis has been performed, using commands described later in this section.

Bar Display

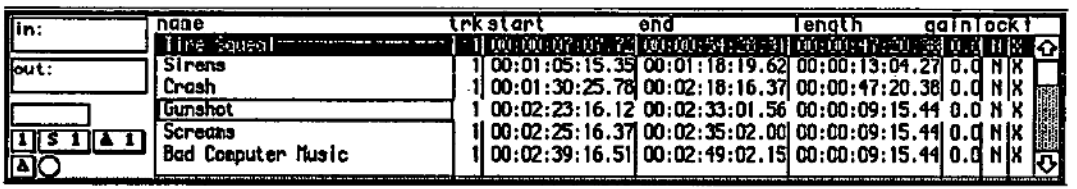


For work such as dialog and sound effects editing, the sound in a panel is divided into individual sections that are separated by silence. In this type of work, the waveform displays may be a distraction, and it may be preferable to display audio as blocks that are labeled by name.

The **Bar** display mode represents each section of sound as a continuous black line, and the vertical amplitude scale does not apply. The editing marks and commands operate as in the **Waveform** display.

Each bar can be named by using the Text display format. When the panel is switched back to the **Bar** display format, the segment name appears in the middle of the bar.

Text Display



In the text format, edited audio is represented as a list in which individual sound segments are listed in chronological order along with their start and end times. The Text display format is really an alternate editing environment, with its own set of commands and conventions. Editing with the Text display is discussed in detail in Chapter 10.

Formatting Commands

Some of the commands in the **EDL** menu are used to rearrange or change the appearance of the editing display. These commands are grouped in the mid-section of the menu.

EDL

Format EDL

The results of an editing session can be formatted into a text document that can be printed on any standard Macintosh printer.

```
Untitled-3

EDL Name: Untitled Edit List-2                                  Page Number: 1

Sample Rate: 48000.0        Emphasis: Off
-----------------------------------------------------------------------------
Channel   EDL Start          EDL End              Gain
             Fade                                 Type              Duration
                Sound File                        Start             End
-----------------------------------------------------------------------------
1         00:00:06:10.78     00:00:34:22.55       0.0
                In-Cross-Fade                     Cosine            00:00:00:00.49
             _lips:St V's:Sun Down:SOURCE.1       00:00:59:17.47    00:01:27:29.24
                Out-Cross-Fade                    Cosine            00:00:00:00.49
          00:01:07:23.37     00:01:47:15.49       0.0
                In-Cross-Fade                     Cosine            00:00:00:00.49
             _lips:St V's:Sun Down:SOURCE.1       00:01:17:26.06    00:01:57:18.18
                Out-Cross-Fade                    Cosine            00:00:00:00.49
          00:02:46:22.68     00:04:46:16.78       0.0
                In-Cross-Fade                     Cosine            00:00:00:00.49
             _lips:St V's:Sun Down:SOURCE.1       00:01:42:13.55    00:03:42:07.66
                Out-Cross-Fade                    Cosine            00:00:00:00.49

2         00:00:06:10.78     00:00:34:22.55       0.0
                In-Cross-Fade                     Cosine            00:00:00:00.49
             _lips:St V's:Sun Down:SOURCE.2       00:00:59:17.47    00:01:27:29.24
                Out-Cross-Fade                    Cosine            00:00:00:00.49
```

FIG. 7-11: The formatted Edit List may be printed or stored as a text file on the Macintosh disk.

In the formatted Edit List, the contents of each panel are listed individually. Audio segments are described by their start and end points in the source Sound File and the point where each segment appears in the edited List. The fade parameters and gain that applies are also described.

The formatted list can be printed using the **Print One** or **Print...** commands in the **File** menu. It may also be save to the Macintosh hard disk or floppy disk using the **Save As...** command.

EDL

Reorder Panels

With the **Reorder Panels** command the user can select any number of panels on the display and arrange them in numerical order by track, starting at the top of the edit display. Unselected panels are displaced towards the lower panels of the display.

EDL

Resize Panels

Each display panel can be displayed in one of two sizes. The larger size is used as the default when four or fewer panels are created in a new Edit List. The narrower panel format is automatically selected when a larger Edit List is created.

Panels in the Text format also have two sizes, but in this case, the smaller size is as large as the larger size of the **Waveform**, **Bar**, or **Frequency Analysis** panels. When the Text panel is resized, it expands to the size of two other panels, in order to show more of the Edit List at one time.

The user can change the size of any panel simply by selecting that panel and choosing **Resize Panels** from the **EDL** menu. The selected panel or panels toggle from their current size to the opposite size, and back again if the action is repeated.

EDL

Merge Panels

When editing with the Text display format, it is often inconvenient to view both channels of a stereo pair in separate panels. The **Merge Panels** commands combines all panels in the same Sync Group so that segments from more than one track are displayed in the same panel. The segments from different panels can be distinguished by the Track Number in the Text display. (See Chapter 10.)

EDL

Refresh Plot ⌘R

As marks are placed and moved on the edit display, bits of the screen are sometimes left uncovered. If the display becomes difficult to read as a result of editing and placing marks, the user can command the system to refresh the display, filling in any parts that may have become misdrawn.

As shown in the **EDL** menu, the key equivalent for **Refresh Plot** is **⌘-R**.

EDL

Do Frequency Analysis

The **Frequency Analysis** display is prepared for a short section of audio, framed by the Left and Right Gates. Sections of less than one second be used for analysis. Otherwise, the system may take an inordinate amount of time to complete the analysis.

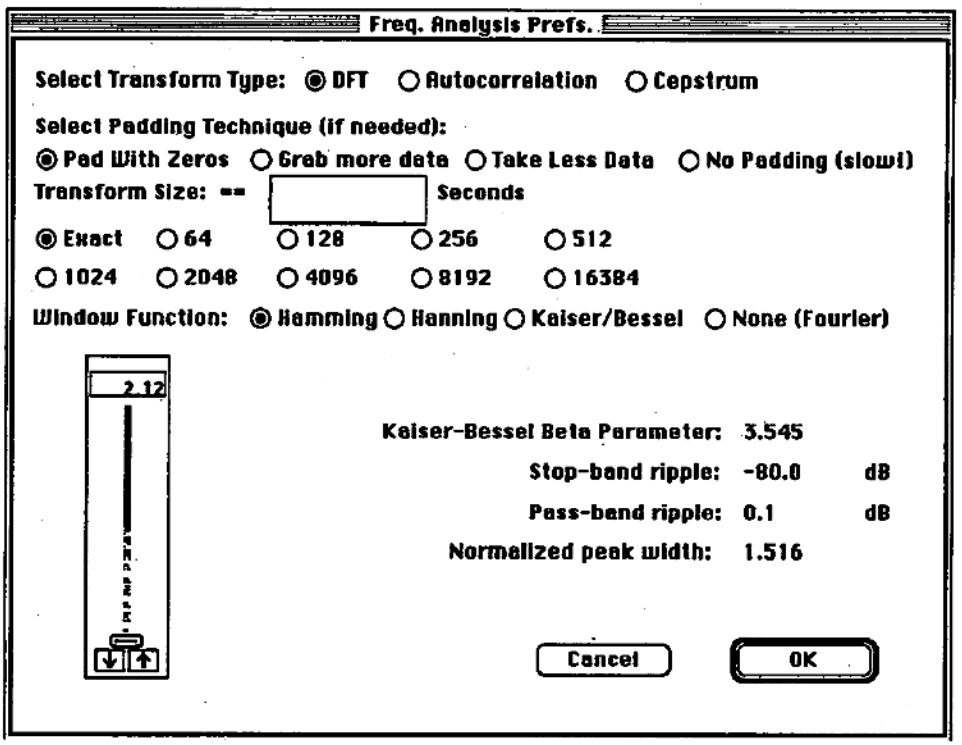


FIG. 7-12: The Freq. Analysis Prefs window provides numerous options in the analysis of audio in a panel.

Specialists in DSP and the Fast Fourier Transform will be pleased to know that almost every aspect of the analysis may be altered by the user, by selecting the **Frequency Analysis Preferences** from the **Preferences** section of the **File** menu. A discussion of the mathematics of frequency-time domain transformation is beyond the scope of this manual.

Display Preferences

In the **Waveform** and **Bar** display types, the user can determine what kinds of editing indicators will be shown. This is frequently helpful in avoiding displays that are cluttered with unused information.

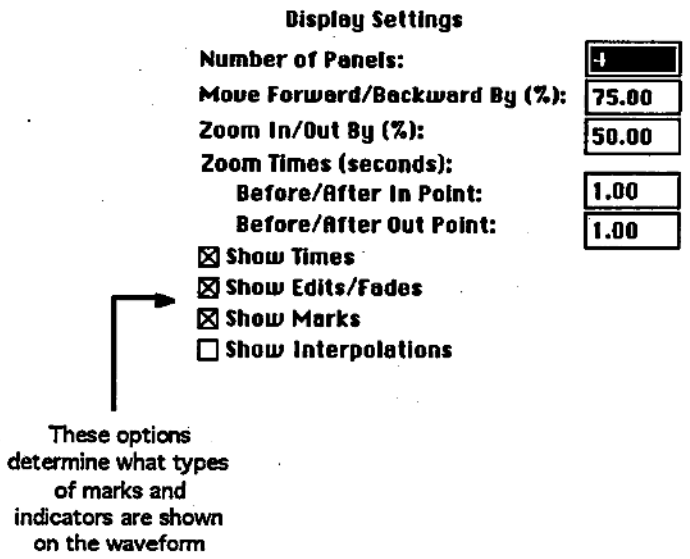


FIG. 7-13: The user has the option of determining what kinds of marks and indicators are shown in the editing display.

Show Times refers to the Gate/In Point Readouts at the lower left and right of the waveform display.

Show Edits/Fades refers to Cross-fades and Half-fades (fade-in or fade-out). This can be especially useful when doing complicated editing. Many edits can result in a hard-to-read display when zoomed out. Turning off the display of the fades greatly clarifies the display.

Show Marks switches on and off the display of the various types of editing Marks (Segment Start and End, Track Start and End, etc.)

Show Interpolations is not used in the SonicStation. It refers to clicks that have been removed with the NoNoise option for the Expanded SonicStation.

III. Interpreting the Display

When a Sound File is opened into an Edit List, an image of the sound waveform appears in the Source panels (presuming that the display mode is set to **Waveform**).

The SonicStation waveform display supports a wide range of zoom levels, from an entire disk's worth of material (or even more) down to the individual sample. The display uses special techniques to speed zooming from one level to another, and ensure that the display provides useful information at any zoom level.

Why Does the Display Look Like That?

The SonicStation deals with digital audio that is *sampled* at a rate of 44.1 or 48 kHz, meaning that every second of sound is made up of 44,100 or 48,000 separate points. A standard Macintosh display monitor, on the other hand, has a total of 640 points (called *pixels*) from one side of the display window to the other. At most zoom levels, a single point on the Macintosh screen must represent many individual audio samples.Sampling rate

To display meaningful information at zoom levels depicting hours, minutes, or even seconds, or audio, some means of reducing the information for each pixel must be adopted. At Sonic Solutions, we have experimented with a number of different ways of *reducing* audio for display.

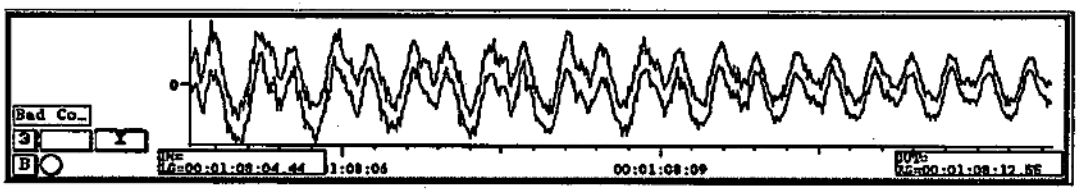


FIG. 7-14: The SonicStation waveform display shows audio in a double-line format that represents the minimum and maximum excursion of the waveform over the span of each screen *pixel*.

The method found to be most effective is to take the *maximum* and *minimum* sample levels for each left-to-right increment of the display. This produces an *envelope*-type display that shows the waveform as two lines. This double-line display is shown at all zoom levels down to the point that it becomes practical to display individual audio samples (about 15 milliseconds at 44.1 kHz sample rate). This is why the waveform display is nearly always seen as a double line.

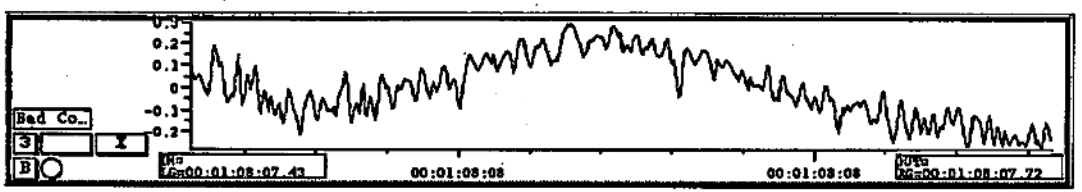


FIG. 7-15: At high magnification levels, the double-line display disappears, to be replaced by a display of individual audio samples.

Other methods of producing the display, such as taking an individual sample or an average of the samples per screen pixel, suffer from the problem of not representing short-term events (such as audio clicks) reliably. With either of these approaches, it is quite possible to have a very large click in the sound that does not appear on the waveform display. This is the reason for using the max-min rule for waveform displays.

Reduce Files

Since individual samples can not be shown at most zoom levels, producing a screen display of an audio waveform requires reading all of the samples in the span of time to be displayed, and calculating the screen values for each pixel. For short spans of audio (a few seconds or less) this can be done in real-time without unduly bothering the user. However, when a display of many minutes is required, it would not be reasonable to ask the user to sit and wait while a new display is calculated.

To resolve this dilemma, the SonicStation calculates a number of views of the waveform at different levels of magnification during recording. These are stored on the Sound Disk as a series of files, called *graphical reduce files*. This is how the SonicStation can zoom to show an hour's worth of music as quickly as it can cut to show a few seconds.

Normally, these reduce files are invisible to the user. Occasionally, however, something may prevent these files from being created correctly at the time of recording. When that happens, the user may become acutely aware of the effects, since the display waveform will no longer seem to match the audio in the file.

Symptoms that have been seen at various times as a result of problems with the Reduce Files include:

- Audio disappears at particular zoom levels. This means that one or more of the Reduce Files did not get created at the time of recording.
- A small spike appears in the display at the start of the Sound File.
- When zoomed in, small spikes appear at regular intervals of about 100 milliseconds.

These situations are rare, but they can occur. The important thing to know is that, in all cases, the problems are *seen and not heard* because they exist *only* in the display file.

To check whether a glitch is in the recording or in the Reduce Files:

- **Zoom in on the area of the anomaly so that 5 seconds or less of audio is displayed.**

If the problem disappears, it is a graphic problem only. At this level, the Reduce Files are not used, and the system looks directly at the audio on the Sound Disk.

Once a Reduce File problem has been identified, it is usually easy to work around it.

IV. Move and Zoom Commands

In using the waveform displays, the user needs to "zoom" in and out to show different amounts of sound, and move from one section of time to another. Two menus, **Zoom** and **Move**, provide commands for moving to any point in the display at the level of magnification required.

The Move Menu

The user's "view area" can be moved forward or backward in increments, or directly to points indicated using the various types of editing marks.

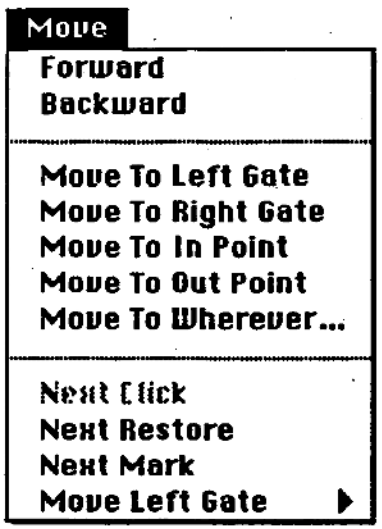


FIG. 7-16: The Move menu provides commands to move the area of view to any point desired.

Many of these commands have QuicKeys™ key equivalents in the "Keyset" provided on the SonicStation diskettes. These make navigation much faster and easier, and we urge all our customers to obtain this utility program, as discussed in Chapter 1, and to use the equivalents provided.

Move
- **Forward**
- **Backward**

These commands move the user's view area forward or backward in time. The increment of motion is determined by user preferences in the **EDL Preferences** window's **Display** section. The increment of motion is expressed as a percentage, which relates to the span of time visible at the current level of magnification. The maximum value of this parameter is 100%, and normally it is set to a somewhat lower value such as the default setting of 75%.

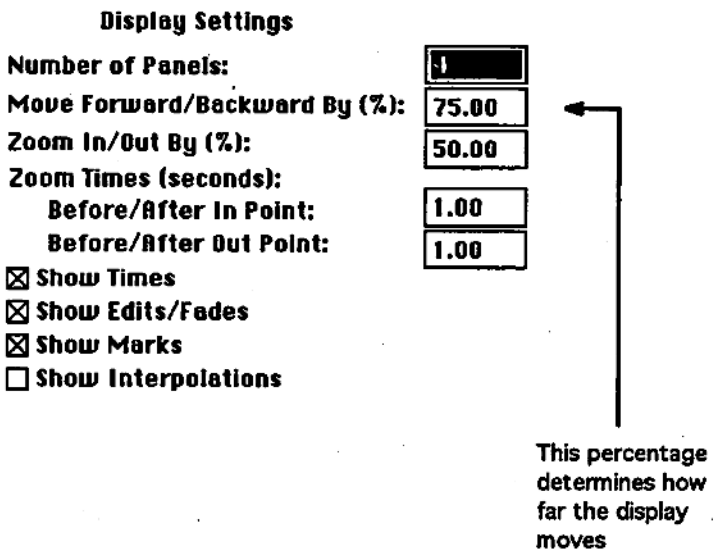


FIG. 7-17: The EDL Preferences' Display section determines the increment of motion used by the commands Forward and Backward.

Moving by a percentage ensures that each increment of motion "overlaps" with the previous view, making it easy to stay oriented to waveform features while moving.

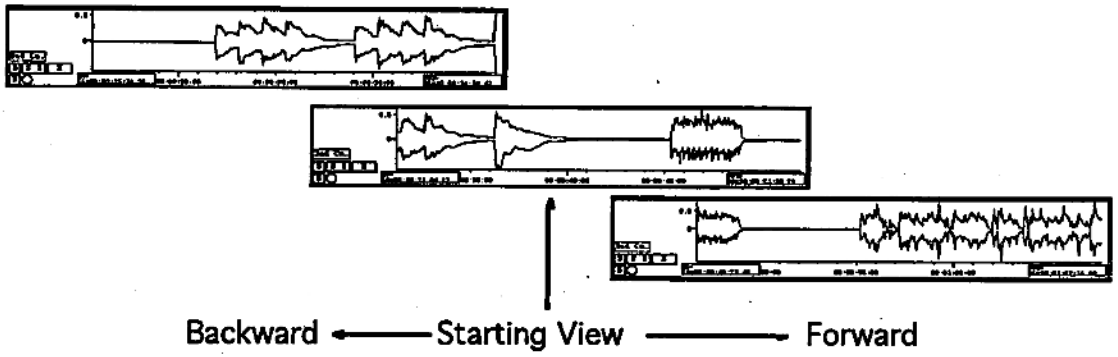


FIG. 7-18: The commands to Move Forward and Backward move the user's view by a percentage of the current area of view, resulting in a view that overlaps the previous view.

The QuicKeys equivalents to these commands, provided in the included Keyset, are the Left and Right Arrow keys in the middle right section of the Macintosh Extended Keyboard.

Move

Move To Left Gate
Move To Right Gate

These commands move the user's view so that the Left or Right Gate are at the exact left or right side of the display panel.

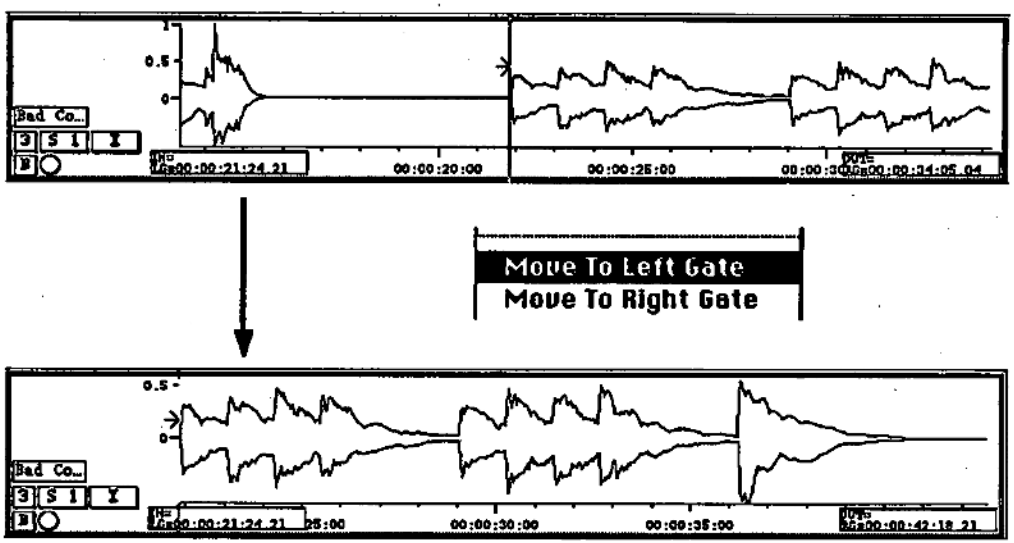


FIG. 7-19: The commands Move To Left Gate and Move To Right Gate shift the user's view so that the Gate is placed at the exact left or right edge of the panel.

NOTE: In the current software version, both of these commands operate only if the Gate is visible on the screen when the menu command is selected.

Move

Move To In Point
Move To Out Point

These commands move the user's view so that the Edit Point (In or Out) is placed close to (but not on top of) the left or right edge of the panel. This lets the user see the current position of the Edit Point is relation to the sound both before and after that point.

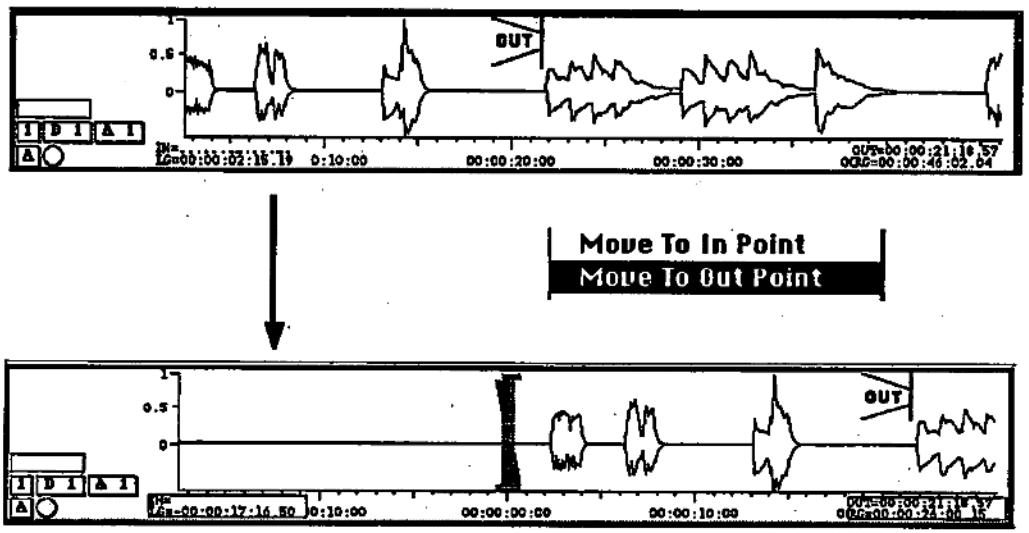


FIG. 7-20: Move to In Point and Move to Out Point shift the user's view so that the designated point is placed close to the left or right edge of the panel.

These two commands operate at all times, even if the Edit Points are located in a section that is not visible onscreen when the command is issued.

Move

Move To Wherever...

This brings up a dialog that lets the user specify an exact location to move to. The user enters time values to define the view area exactly. There are two modes available. In the default setting of **Set Left and Right Edges**, the values entered define the exact locations that will match the left and right edges of the panel.

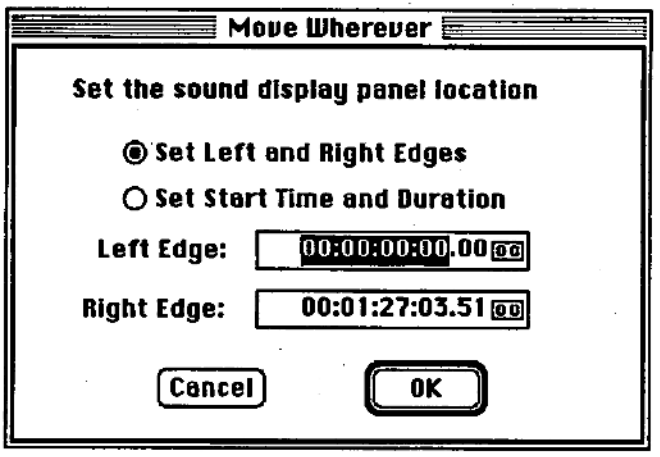


FIG. 7-21: The **Move Wherever** dialog lets the user specify the exact points to which the view area will move.

In the alternate mode (**Set Start Time and Duration**), the user still enters the value that will correspond to the panel's left edge, but the second value now becomes the length of time that the display view area will encompass.

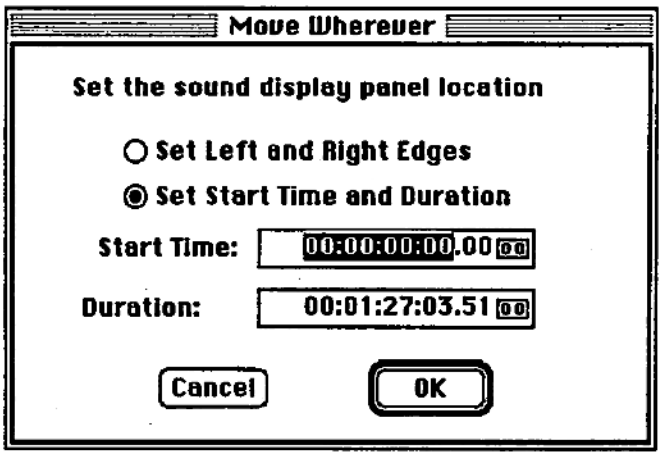


FIG. 7-22: In its Set Start Time and Duration mode, Move Wherever defines the view area by the position of the panel's left edge and the length of time to be displayed.

Note that unlike the other commands in the **Move** menu, **Move to Wherever...** also changes the zoom level so that more or less sound may be displayed after the command is executed than beforehand.

The QuicKeys equivalent provided for **Move to Wherever** is ⌘-M.

Move

Next Mark

Several types of Marks are used in editing on the SonicStation, as discussed in Chapter 8. The **Next Mark** command moves the user's view area forward in time to place the next mark in sequence at the center point of the panel.

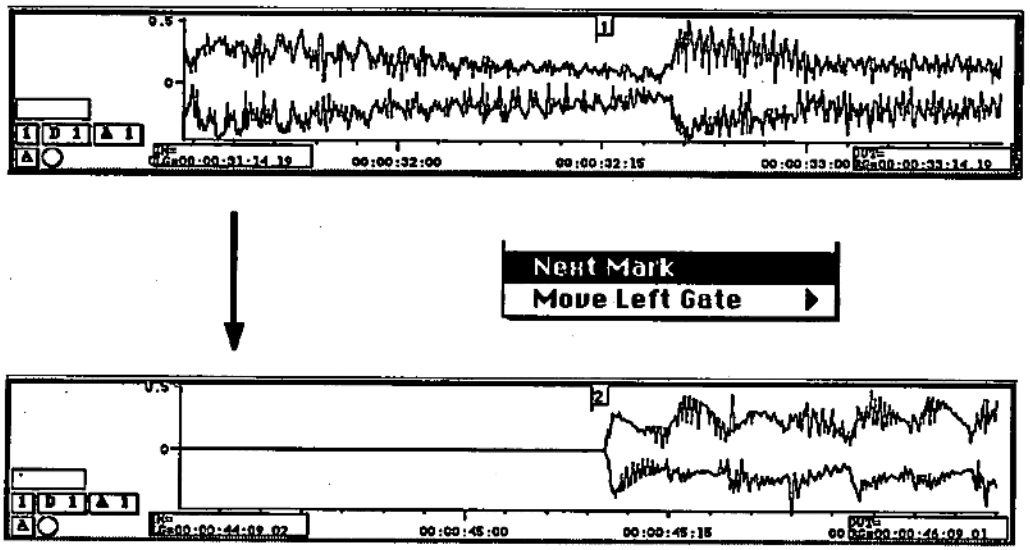


FIG. 7-23: The Next Mark command moves the view area so that the next mark in sequence is placed in the middle of the panel.

This makes it easy to review the positions of all Marks and, if necessary, change them.

The QuicKeys equivalent for **Next Mark** is ⌘-Right Arrow.

Move

Move Left Gate ▶

This command is different from others in the **Move** menu in that it moves one of the "pointers" (the Left Gate) to various positions in the panel, rather than shifting the user's view. A "pull-right" menu provides the options that are available.

Next Restore
Next Mark
Move Left Gate ▶
- Left Gate To Next Edit
- Left Gate To Next Mark
- Left Gate To In Point
- Left Gate To Out Point
- Left Gate To End

FIG. 7-24: The Move Left Gate command, unlike other Move menu commands, changes the position of an edit display marker (the Left Gate) rather than the user's view of the panel.

All of these options work in a "Left-to-Right" fashion. There are no commands to move to the previous Edit, Mark, etc. Since the Left Gate is the principle means of setting points in the system, these commands can be very important in operation.

These commands move the Gate as their principal action. If the location feature that the Gate is moved to is visible onscreen, the view does not change. However, if the located point is off-screen at the time the command is issued, the view will shift to place the target location in the middle of the panel.

The Zoom Menu

Whereas the **Move** commands (for the most part) move the view area without changing the level of magnification, the **Zoom** commands work as the name implies. They "Zoom In" (or out) to various levels, and encompass various parts of the panel.

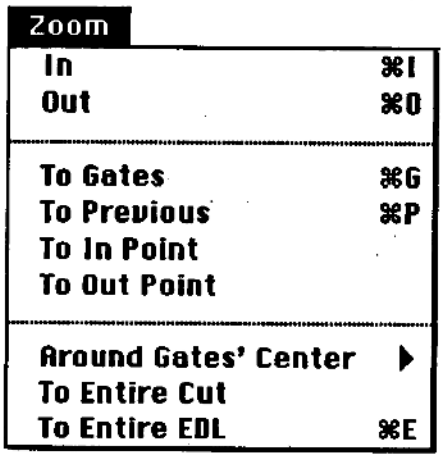


FIG. 7-25: The Zoom menu commands let the user view sound at any level of magnification desired.

Most of the **Zoom** menu commands have command-key equivalents built in to the system. others have equivalents provided by way of QuicKeys™.

Zoom	
In	⌘I
Out	⌘O

The **In** and **Out** menu commands and their command-key equivalents, ⌘-I and ⌘-O, are the principal means of moving the view of the waveform in or out. The zoom is performed around the current center of the panel.

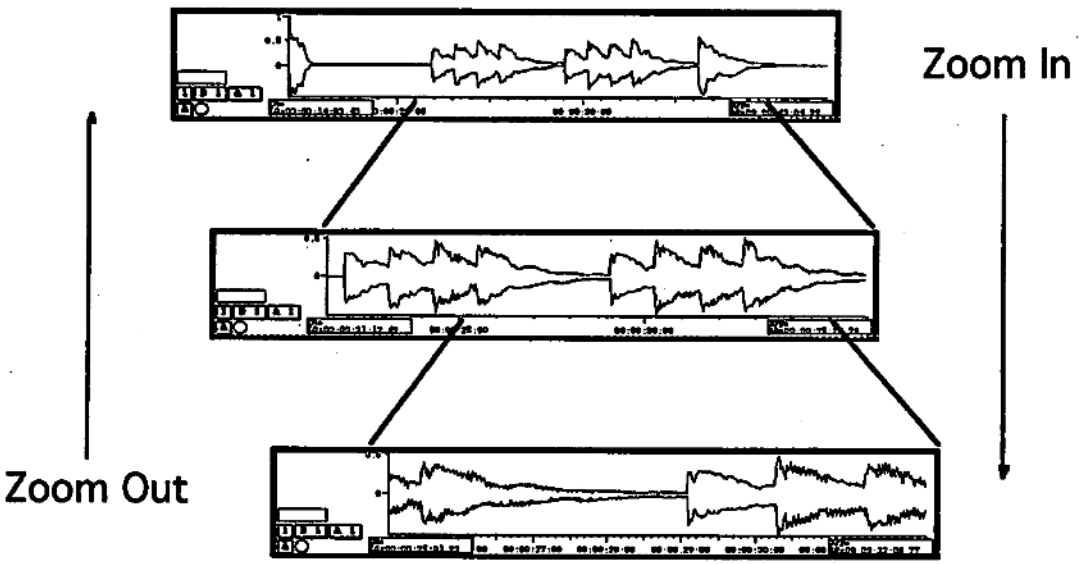


FIG. 7-26: Three levels of "Zoom." Each time that the In or Out commands from the Zoom menu are executed, the view moves by one level.

(Zoom) **In** and **Out** are symmetrical operations. If you zoom in, you can return to the previous view by zooming out, so long as the view has not moved in the mean time.

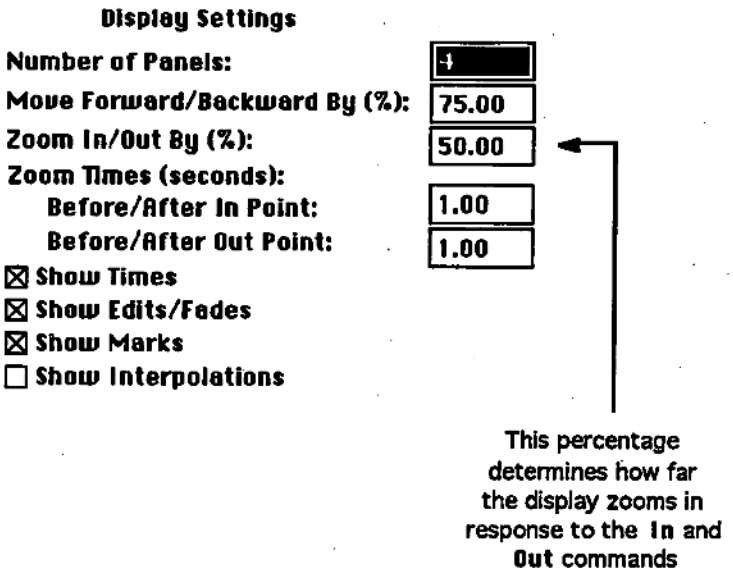


FIG. 7-27: The degree of Zoom is set in the Display Settings area of the EDL Preferences dialog.

The amount of zoom in or out is determined in the **Display** section of **EDL Preferences.** This parameter is a percentage with a legal range of 0.01 to 100%. The actual proportionate zoom that results can be calculated from the inverse of the percentage entered.

For example, the default value is 50%, or 1/2. By inverting the fraction, we get the number "2." This is the amount of zoom that results. The higher the **Zoom In/Out By** percentage, the smaller the actual zoom. At a value of 100%, there is no zoom action at all. Conversely, very low values cause extreme zoom ratios.

Zoom

To Gates ⌘G

The (Zoom) **To Gates** command is one of the most useful ways to navigate on the SonicStation's editing display. It provides an easy and intuitive way to zoom in to view any area of the visible panel.

To use the **To Gates** command:

- **Bracket the area you want to view using the Left and Right Gates.**

FIG. 7-28: (Zoom) To Gates uses the positions of the Left and Right Gates to determine the area to be viewed.

- **Choose To Gates from the Zoom menu.**

OR **Use the command-key equivalent, ⌘-G.**

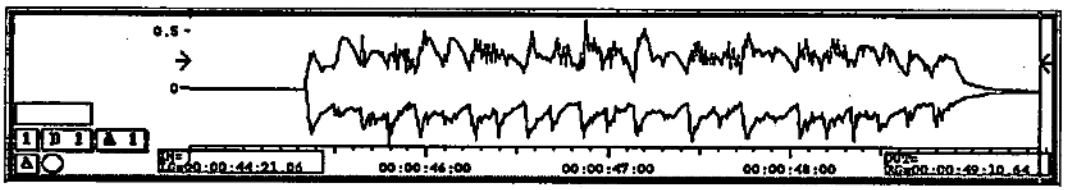


FIG. 7-29: The display zooms to exactly encompass the area marked by the Gates.

To Gates is frequently used to home in on an area for editing.

Zoom

To Previous ⌘P

The (Zoom) **To Previous** command serves as an "Undo" for Zoom commands. When selected, the zoom level is returned to the level in effect before the last previous Zoom command was executed.

Zoom

Around In Point
Around Out Point

These commands home into the area around either one of the Edit Points.

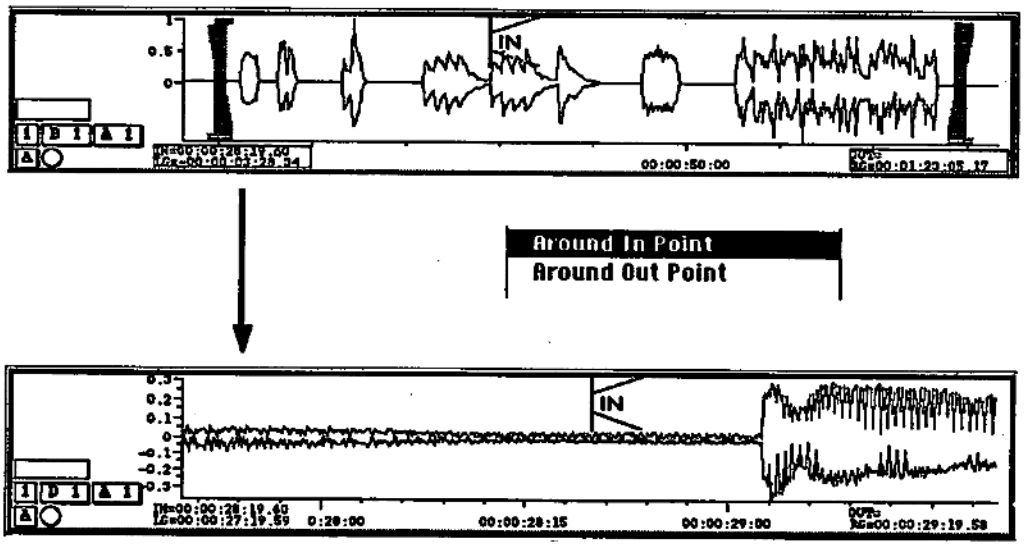


FIG. 7-30: The commands Around In Point and Around Out Point are used to home in on the edit points for fine adjustment.

The amount of time to the left and right of the Edit Point is determined by user preference in the **Display** section of **EDL Preferences.**

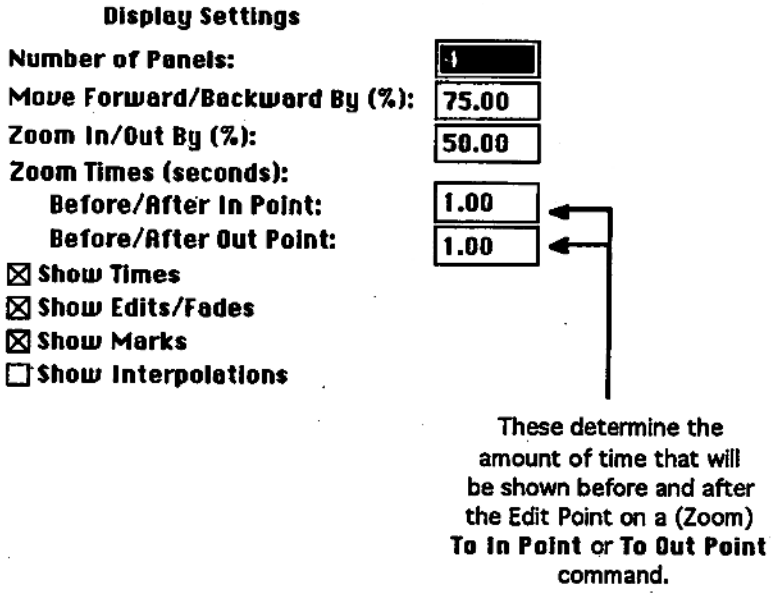


FIG. 7-31: The Zoom Times in the EDL Display Preferences indicate the amount of time displayed before and after the In and Out points.

The legal values for the **Zoom Times** range from 0 to 100 seconds.

Zoom

Around Gates' Center ▶

This command zooms to an area centered around the point exactly between the Left and Right Gates. A pull-right menu determines how broad that area is.

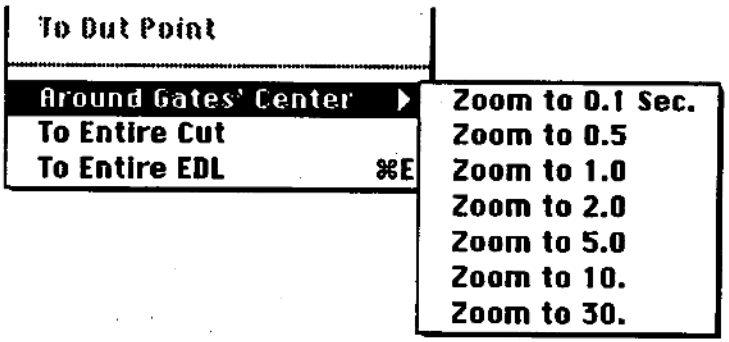


FIG. 7-32: The command (Zoom) Around Gates Center has several possible values for the length of time to be viewed.

The commands for 1, 2, 5, 10, and 30 seconds are also assigned to QuicKeys equivalents Control-1, -2, -3, -4, and -5.

Zoom

To Entire Cut
To Entire EDL ⌘E

The two "Zoom to Entire" commands differ in how they determine where to zoom. (Zoom) **To Entire Cut** looks at the selected panel and others in its Sync Group only. **To Entire EDL**, on the other hand, looks across all panels in the Edit List and zooms to the length of the longest panel.

Summary

The SonicStation displays audio in a series of horizontal panels in a window on the Macintosh screen. Each panel represents a single channel of audio, together with edits.

Panels may be displayed in any of several formats. Two of these formats, **Waveform** and **Bar**, show audio in a "time line." In the **Waveform** display, audio amplitude is shown on the vertical scale as well.

In the **Frequency Analysis** display, a section of audio is shown according to the level of its component frequencies. All of the techniques of zooming and moving on the **Waveform** display can be applied in the **Frequency Analysis** display mode.

Audio waveforms, are displayed in a "min-max" envelope format. The graphic displays of the waveform at various zoom levels are calculated at the same time that the audio is recorded. Because the actual sound and the graphic display are maintained as separate files, problems can sometimes arise in which the display of audio does not match that heard on playback.

Two menus, **Move** and **Zoom**, provide comprehensive commands to move the area of the display view to any level of magnification desired and to show any portion of the audio waveform.

Chapter 8

Placing In/Out Points and Editing Marks

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Introduction

The SonicStation uses two major types of marks in editing with the waveform display. These have their own menu and specific commands for placing, moving, and changing each type.

- The In and Out points, known collectively as the Edit Points, are used to mark the waveform for cutting and splicing.
- A set of general purpose markers are used to define Segments, place comments, and define track start, end, and index for CD mastering.

Marks may be placed and moved using menu commands or their key equivalents (which is generally faster).

I. The Mark Menu

The **Mark** menu includes all of the commands that affect the placement of the Edit Points and the general-purpose editing marks.

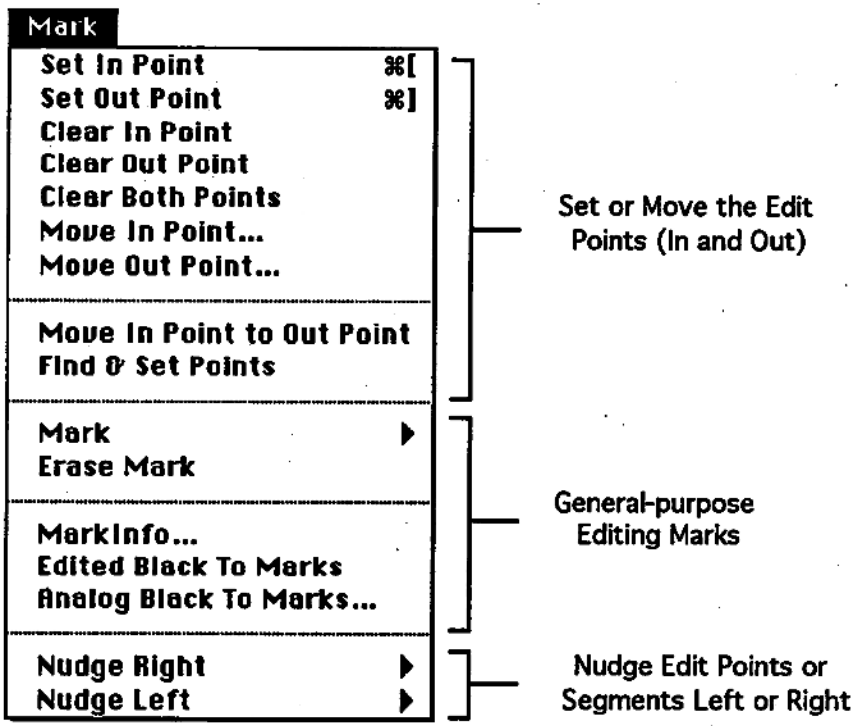


FIG. 8-1: The Mark menu controls the placement of the primary Edit Point markers (In and In), as well as general-purpose editing marks.

The menu is divided into three sections. The first section governs the placement of In and Out points. The middle section covers the general-purpose marks. The bottom two commands affect the In and Out points as well as audio Segments (see Chapter 11).

II. In and Out Points

The In and Out points (jointly known as the Edit Points) are used to mark where audio is to be cut and inserted while editing in assembly style. These important marks have their own set of menu commands and key equivalents for placing, clearing, and moving the Edit Points.

Placing Edit Points

The In and Out points can be set using the keyboard, or by means of menu commands.

Mark

Set In Point	**⌘[**
Set Out Point	**⌘]**

The most important commands in placing the Edit Points are at the top of the menu. The **Set In Point** and **Set Out Point** commands place the corresponding Edit Point marker in the currently selected panel *and all panels in the same Edit Group.*

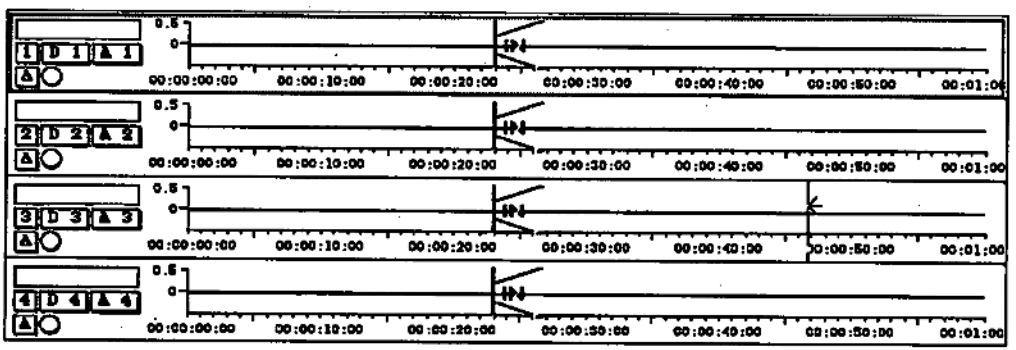


FIG. 8-2: The Edit Point is placed in the selected panel and all panels belonging to the same Edit Group.

The position at which the Edit Point marker is placed depends on whether playback is stopped or in progress:

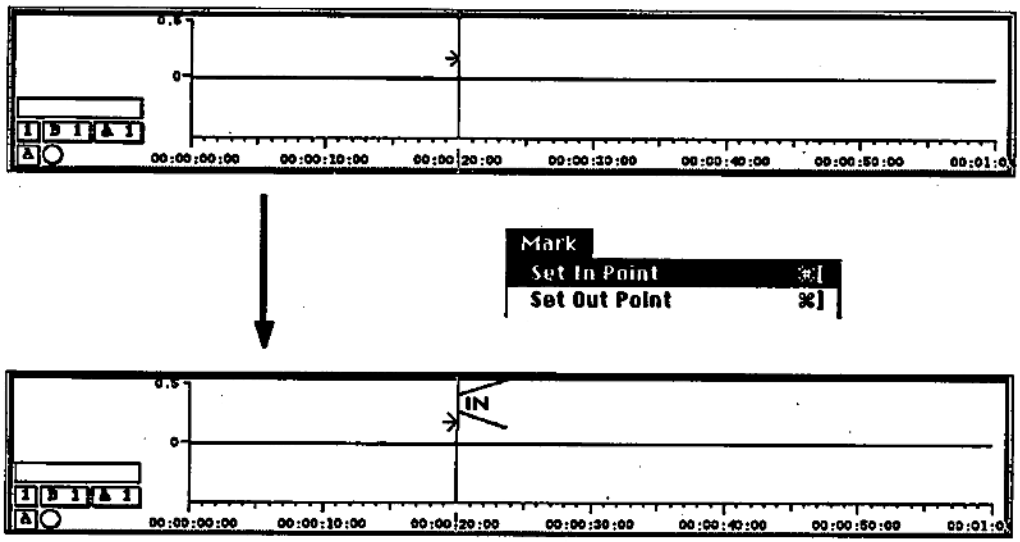


FIG. 8-3: **If playback is stopped when Set In Point (⌘ - Left Bracket) or Set Out Point (⌘ - Right Bracket) are issued, the Edit Point is placed at the position of the Left or Right Gates.**

If playback is stopped, the Edit Points are placed at the position of the Left (In point) or Right (Out point) Gates.

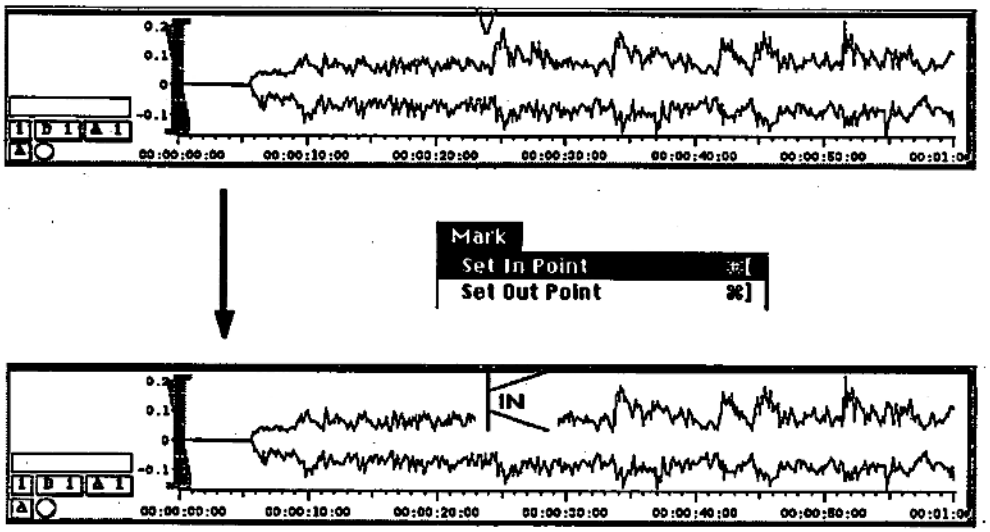


FIG. 8-4: If an audition (playback) is in progress when Set In Point or Set Out Point are issued, the Edit Point is placed at the position of the play pointer.

If **Set In Point** or **Set Out Point** are used while an audition is in progress, the Edit Point is placed at the position of the play pointer at the instant the command is issued.

These two commands are permanently (*not* via QuicKeys) assigned to key equivalents:

⌘- Left Bracket ("[")	**Set In Point**
⌘ - Right Bracket ("]")	**Set Out Point**

The user should try to use these equivalents as much as possible, so that they become second-nature. Their use can save considerable time during editing.

Clearing the Edit Points

Mark

- **Clear In Point**
- **Clear Out Point**
- **Clear Both Points**

Previously placed Edit Points can be removed from the display when necessary. These commands also have QuicKeys equivalents, using the Control key instead of the ⌘ or Option keys to characterize the option. The Left and Right Brackets are still used to indicated the In or Out point, but the Backslash character ("\") is used to indicate that both points are to be erased.

• Control-Left Bracket ("[")	**Clear In Point**
• Control-Right Bracket ("]")	**Clear Out Point**
• Control-Backslash ("\")	**Clear Both Points**

Moving Edit Points

The In and Out points can be moved by specifying an exact time location, by moving the Left Gate to a desired point using the commands in the **Move** menu and then placing the Edit Point, or by setting the Edit Points to the site of an existing single fade or crossfade.

Mark
- **Move In Point...**
- **Move Out Point...**

The Edit Points can also be set by the exact time value. Either of these commands brings up a dialog to enter the point where the corresponding Edit Point is to be placed in the selected panel.

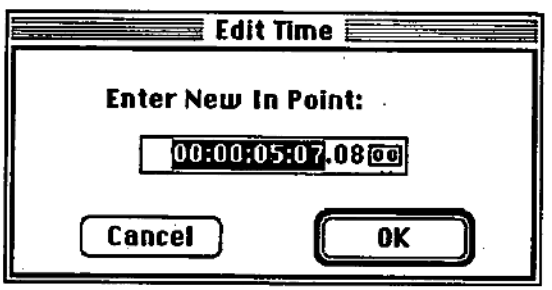


FIG. 8-5: By holding down the Option key while pressing the left or Right Bracket keys, In and Out points may be set by precise time location.

The time field is the standard type described in Chapter 5. A time value may be entered by typing or by dragging up or down on the time field. A value may also be copied from another field and pasted using the standard Macintosh commands ⌘-C and ⌘-V. Also, the current position of the Play Pointer, or the position at which it was when playback was last halted, can be entered simply by hitting the space bar while the time field is selected.

These commands also have QuicKeys equivalents in the standard set.

- Option - [**Move In Point**
- Option -] **Move Out Point**

There are also commands that move the Edit points to the positions occupied by the opposite point, or of a previous edit.

Mark

Move In Point to Out Point

In editing, it is often necessary to append a section of audio to the exact end of the last section added. The most straightforward way to do this is to move the In point to the position occupied by the Out point when the previous edit was executed.

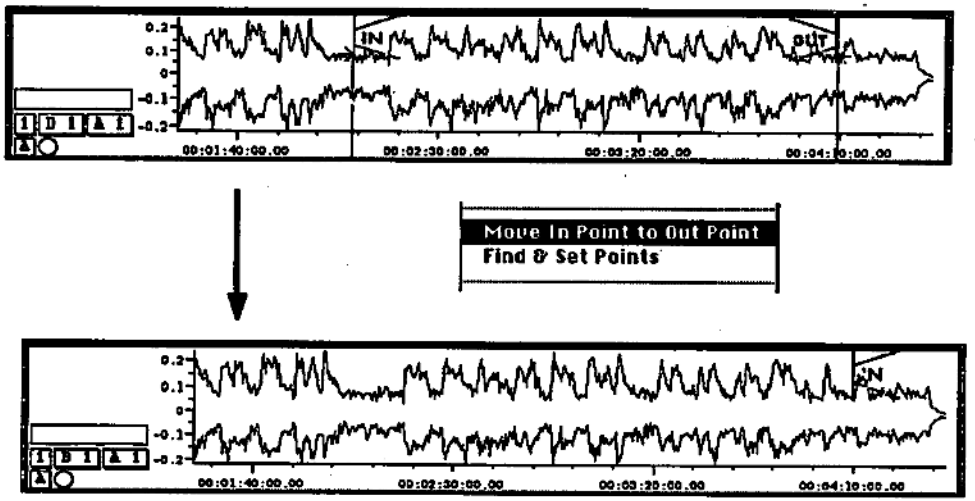


FIG. 8-6: Move In Point to Out Point causes the In Point to move to the position of the Out point. The Out point is erased.

Move In Point to Out Point swaps the In point into the position previously held by the Out point. The Out point is eliminated entirely. This command makes it easy to append segments one at a time, starting from the beginning of an empty panel.

This command also has a QuicKeys equivalent.

- ⌘-Backslash **Move In Point to Out Point**

Notice that the Backslash ("\") character has been reserved for commands that affect both Edit Points at once, while the Left and Right Brackets ("[" and "]") are used to change the position of either Edit Point individually.

Mark

Find & Set Points

This command is used to move both Edit Points to the positions of an earlier edit. When executed, the commands searches for the crossfade or single fade in the panel that is closest to the position of the Left Gate.

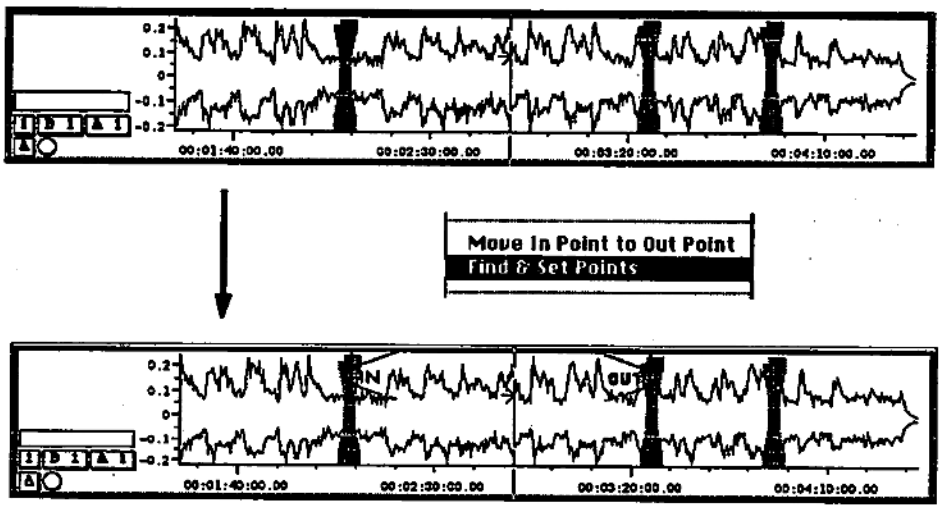


FIG. 8-7: The Find & Set Points command places the In point and Out point at the nearest fade (cross-fade or single fade) to either side of the Left Gate.

Like the other commands that affect the position of the Edit Points, **Find & Set Points** has a QuicKeys equivalent that combines a qualifier key with one of the group of three keys, Left Bracket, Right Bracket and Backslash. Since this command affects both points at once, it is assigned to use the Backslash ("\") character.

- Option-Backslash ("\") **Find & Set Points**

The next items in the **Mark** menu are used for the general-purpose Edit marks, described later. At the bottom of the menu are two commands that also affect the placement of the In and Out Points.

III. General-Purpose Editing Marks

The commands in the middle section of the **Mark** menu deal with the placement, movement, and editing of several types of marks that share similar characteristics and appearance.

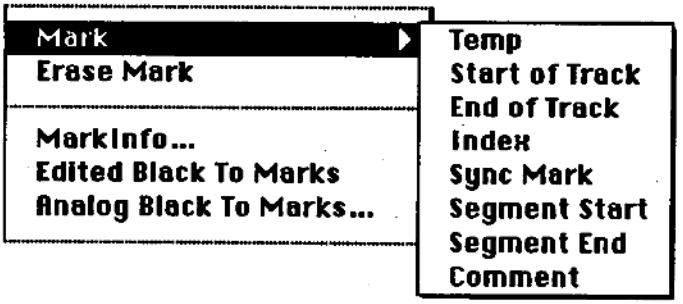


FIG. 8-8: The center section of the Mark menu deals with the eight types of editing marks.

There are eight different types of marks available.

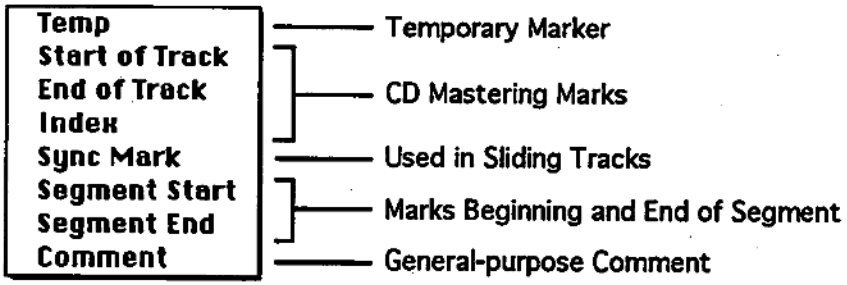


FIG. 8-9: The mark types are divided into five different categories.

Temp

A Temporary marker is just that. The mark can be placed and used as a general position indicator, or it can later be changed to one of the other types of utility markers.

Start of Track
End of Track
Index

These marks correspond to the Start and End of tracks on a Compact Disc, as well as Index marks. When equipped with the optional CD Printer drive for recordable Compact Disc and the TrackMaker software, these marks can be used to produce fully-standard CDs, with the tracks located precisely as desired.

If the Premaster CD option is selected, the recorded CDs may be used directly for mass production at CD pressing plants equipped with the Sonic Solutions MasterMaker system.

The **Start of Track**, **End of Track**, and **Index** marks are also used in the Expanded SonicStation, equipped with the PQ option, to read and generate the "PQ Burst" required for CD mastering using Sony PCM-1630 or DAT tape.

Sync Mark

Sync marks are used to mark a point in the waveform that will be used as a reference marker for sliding the audio in the track to a new position

Segment Start
Segment End

The **Segment Start** and **Segment End** marks are used to define sections of a Sound File that can be used as Segments. When the command **Create Segments** is issued, crossfades are inserted at the point of the marks, and the section between the marks become Segments that can be dragged, Copied and Pasted anywhere in the Edit List.

Editing with Segments is described in detail in Chapter 11.

Comment

A **Comment** mark can be used to enter text that is displayed (in short form) on the screen in the title flag of the mark. The mark can be opened to enter a more lengthy text.

Placing Marks

Marks can be placed by using the **Mark** menu command with its pull-right menu, or by using the QuicKeys equivalents.

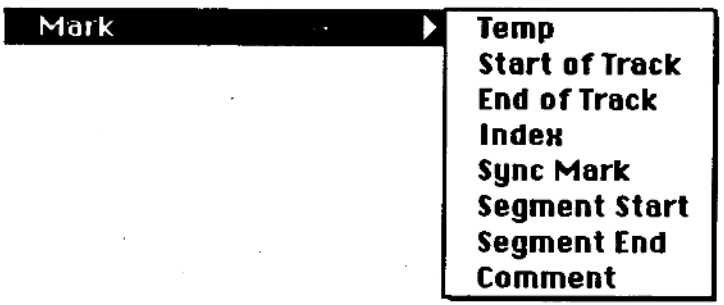


FIG. 8-10: The pull-right menu to the Mark command can be used to place any of the eight types of mark.

When a **Mark** command is issued, the mark is placed at the position of the Left Gate, if playback is stopped. (Note: this applies to all marks types <u>except</u> the **Segment End mark**. These marks are placed at the position of the Right Gate.)

If the command is issued while playback is in progress, the mark is placed at the position of the Play Head at the instant the command is issued.

The different types of marks are similar in appearance, but of different colors. As marks are created, they are assigned numbers in sequential order.

Placing Marks with QuicKeys

The different types of marks are assigned to the group of QuicKeys F9, F10, F11, and F12.

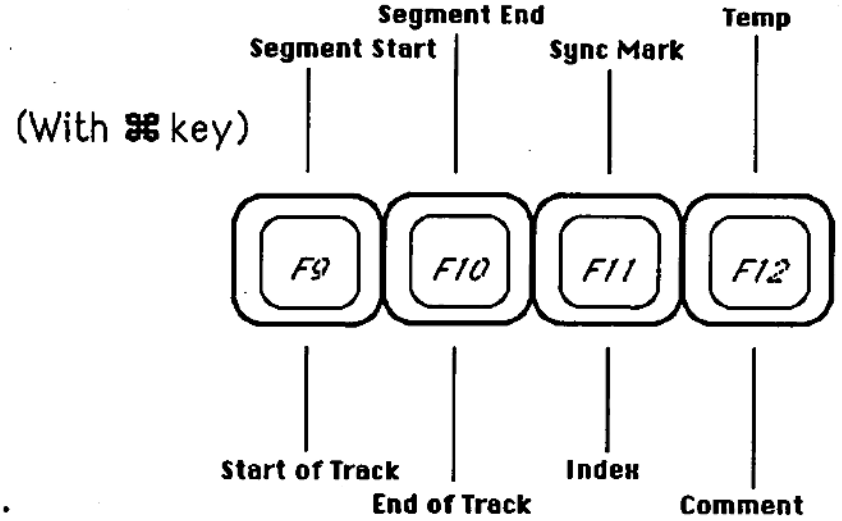


FIG. 8-11: Function keys F9 through F12 are assigned to place editing marks.

This makes it easy to place marks "on the fly" during playback or recording.

Placing marks during recording

Editing marks can also be placed while a Sound File is being loaded onto the SonicStation's Sound Disk. When the Sound File is opened into an Edit List, the marks appear in the panel along with the sound.

To place editing marks during recording:

- **Start recording a Sound File, as described in Chapters 2 and 6.**
- **While monitoring the incoming audio, press the key that corresponds to the QuicKey equivalent for the type of mark to be placed.**

Entering marks during recording can be a great time saver, especially when editing material such as dialog or sound effects. This type of material is usually divided into a large number of audio Segments, and making the assignment during load can be very efficient.

Erasing Marks

Marks can be removed, singly or in groups, from a panel by using the **Erase Mark** command.

To delete one or more marks:

- **Place the Left and Right Gates around the mark or marks to be delete.**
- **Select Erase Marks from the Mark menu.**

The QuicKeys equivalent can also be used to erase marks.

- Control-F9 **Erase Marks**

Examining and Altering Marks

The **Mark Info** dialog provides a means of examining and moving each mark, changing its type, entering detailed comments, or entering other information particular to a certain mark type.

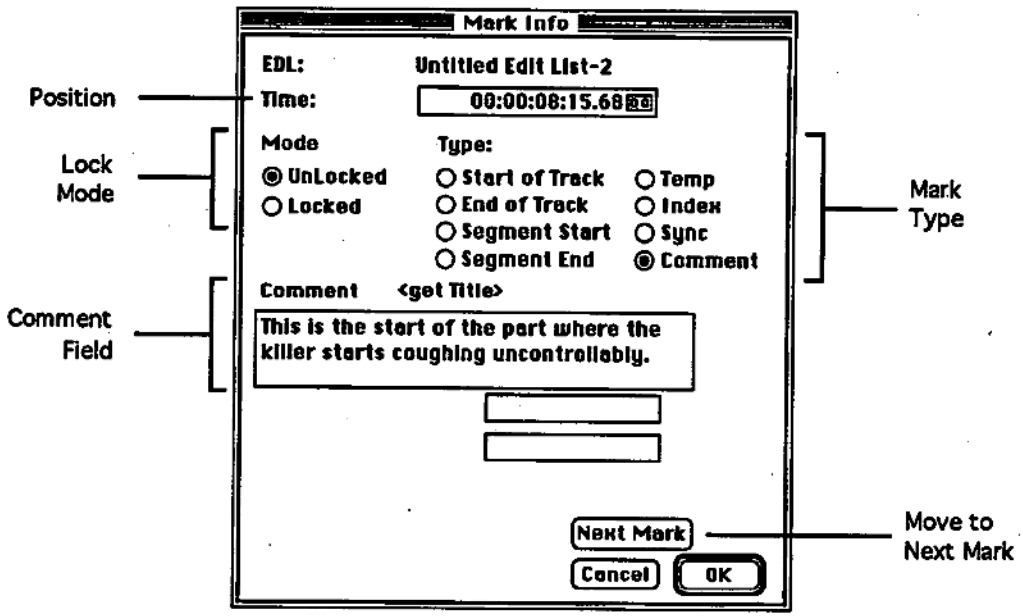


FIG. 8-12: The Mark Info dialog can be opened by Option-double-clicking on the mark to be examined, or by using the MarkInfo menu item.

To open the **Mark Info** dialog:

- **Place the Left and Right Gates on either side of the mark to be edited.**
- **Select MarkInfo from the Mark menu**

OR **Double-click on the mark to be examined, while holding down the Option key.**

The **Mark Info** dialog has buttons and fields to allow alteration of every aspect of a mark.

Time: 00:00:08:15.68 00

A mark can be placed anywhere in the panel by editing the Time value. This is a standard SonicStation time field, and a new value can be entered by typing, dragging (up or down), or grabbing a time from the current play position (press the space bar while the field is selected).

Mode

◉ **UnLocked**
○ **Locked**

The Lock Mode determines whether a given mark will move when the audio that it marks is shifted within the panel.

Type:

○ **Start of Track**	○ **Temp**
○ **End of Track**	○ **Index**
○ **Segment Start**	○ **Sync**
○ **Segment End**	◉ **Comment**

A mark of any type can be changed into a mark of another type simply by selecting the appropriate radio button.

Comment **<get Title>**

This is the start of the part where the killer starts coughing uncontrollably.

A comment of any length may be entered in this field. When the mark is displayed, a shortened form of the comment replaces the numeric label. This may be used for song titles, etc.

Next Mark

When editing marks, it is frequently more convenient to proceed to the next mark in turn without closing the dialog to return to the waveform display. The **Next Mark** button makes it easy to move through the entire panel.

Using CD Track and Index Marks

The **Start of Track**, **End of Track**, and **Index** marks are special marks used for CD premastering. When used in conjunction with the CD Printer and *TrackMaker*, they are used to place identifying marks directly on the surface of the recordable Compact Disc. Details on use of these marks are provided in the manual for the *TrackMaker* software option.

Special commands are available to simplify placement of **Track Start** and **Track End Marks**.

Mark
Edited Black To Marks
Analog Black To Marks...

"Black" is the term used to indicate silence in digital audio. These two commands scan through the audio on a panel and place **Start of Track** and **End of Track** marks wherever audio starts or stops.

Edited Black to Marks searches throughout the panel and places marks wherever audio adjoins perfect, digital "black."

Analog Black To Marks... uses a threshold value to search for sections of relative, or analog, silence. **Analog Black To Marks** is used when audio to be mastered is transferred directly from a non-digital medium, while **Edited Black to Marks** is best used when cuts have been assembled in the SonicStation.

To place marks using **Edited Black To Marks**

- **Place the tracks to be marked in the upper two panels of the Edit List**
- **Assign these panels to Edit Group "None."**
- **Select Edited Black to Marks... from the Mark menu.**

The marks are placed wherever audio adjoins digital silence.

To place marks using **Analog Black To Marks**

- Place the track to be marked in the upper two panels of the Edit List
- Assign these panels to Edit Group "None."
- Select **Analog Black to Marks...** from the **Mark** menu.

A dialog box appears to let the user set the parameters by which the System will search for silences.

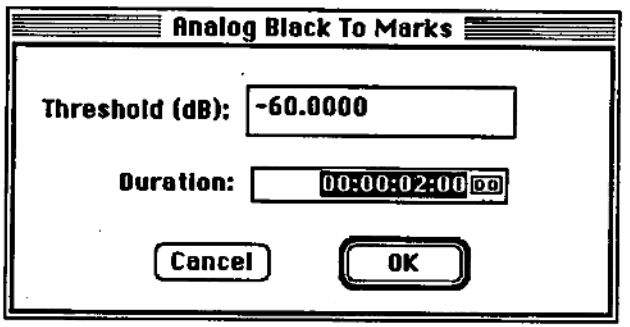


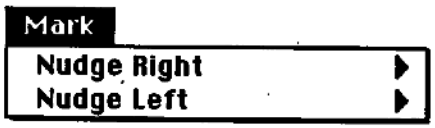
FIG. 8-13: The Analog Black to Marks dialog sets the parameters for searching.

The **Threshold** is the level (in negative dB) that will be used to trigger placement of a mark. The default value of -60 dB is appropriate for most purposes. If the source material is particularly noisy, a higher value may be used. It also possible that a lower value could be needed when working with material with very wide dynamic range.

The **Duration** parameter sets the minimum length of time that will be seen as a silence. With the default value of 2 seconds, for example, any silences shorter than that time will be ignored.

IV. Using the Nudge Commands

The bottom two items of the **Mark** menu refer again to the In and Out points, as well as to audio Segments.



When selected by click-holding the mouse, each of these items reveals a pull-right menu that lists the different elements that can be shifted left or right on the selected panel.

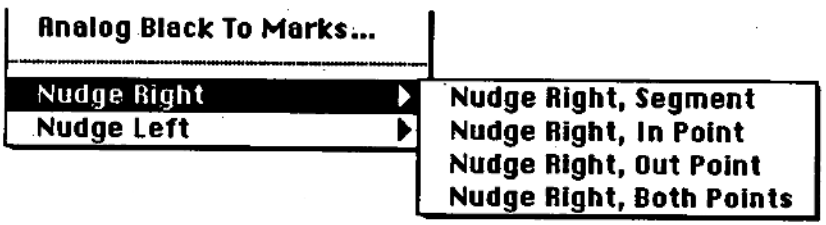


FIG. 8-14: The Nudge Right and Nudge Left commands can be used to move the position of either or both of the Edit Points, as well as the position of Segments.

These commands can be used to move selected audio Segments as well as the Edit Points. Editing with Segments is discussed in detail in Chapter 11.

These commands are useful in positioning elements precisely in a panel. All these commands have been assigned to QuicKeys equivalents, following the rule that Left and Right Brackets affect the individual points, while the Backslash is used when both points are to be moved together.

- ⌘-Option-left arrow (<-) **Nudge Left, Segment**
- ⌘-Option-right arrow (->) **Nudge Right, Segment**
- ⌘-Option-Left Bracket **Nudge Left, In Point**
- ⌘-Control-Left Bracket **Nudge Right, In Point**
- ⌘-Option-Right Bracket **Nudge Left, Out Point**
- ⌘-Control-Right Bracket **Nudge Right, Out Point**
- ⌘-Option-Backslash (\) **Nudge Left, Both Points**
- ⌘-Control-Backslash **Nudge Right, Both Points**

The SonicStation user is encouraged to use key equivalents whenever possible, until they are thoroughly learned.

Nudge Preferences

The amount of time by which the designated element is moved and additional options concerning the Edit Points are controlled from the user preference dialog **Nudge Preferences.**

To access the **Nudge Preferences** dialog

- From the **File** menu's **Preferences** pull-right menu, select **Nudge Prefs...**

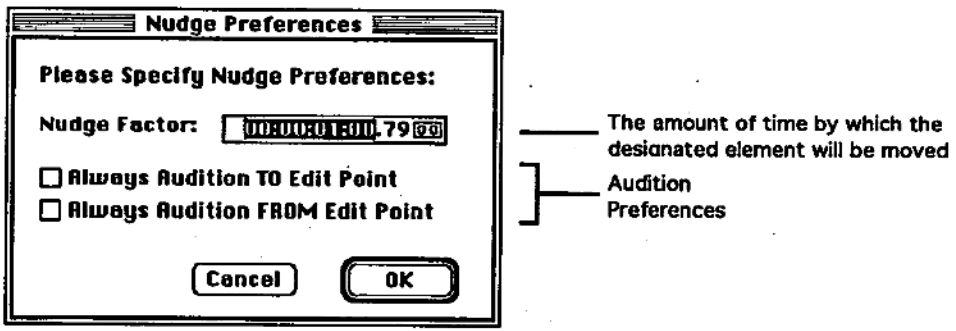


FIG. 8-15: The Nudge Preferences dialog sets the amount of time by which the target element will be moved.

The time value in the **Nudge Factor** field is a standard SonicStation time value as described in Chapter 5. The value may be altered by typing or dragging up or down on one of the individual fields.

> NOTE: The display format for the **Nudge Factor** is determined by the setting in the **Run Time Preferences** dialog. It is generally a good idea to make sure that this value agrees with the format used for the individual Edit List, as set in **EDL Preferences.**

If either of the Audition Preferences check boxes are checked, an audition up to or starting from the new Edit Point will be performed immediately following each nudge.

Summary

The **Mark** menu commands and their QuicKeys and "hard-wired" key equivalents are used to place and move markers in the audio waveform display.

The In and Out points are used to mark the position where edits are to be performed directly.

Other editing marks are used to designate Segments, and to mark points in the waveform for the purposes of CD premastering.

Chapter 9

Editing with Insert and Delete Commands

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Introduction

The SonicStation provides diverse and flexible options for editing. If you can conceive of an edit it can be performed, often in more than one way.

The SonicStation's editing operations can be divided into two categories:

- Insert and Delete Editing
- Segment Editing

These categories do not exclude each other. Both types of commands are availablein all situations. (The user has the option of disabling Segment editing commands if necessary.) Often a given edit may be performed using commands of either type.

Insert and Delete Editing is similar in concept to editing with tape. The panels in the editing display are designated as Source or Destination. Sections of audio are moved one at a time from the Source panels into the Destination panels, using the commands **Insert** and **Insert & Ripple.** Edit Points (In and **Out**) are used to mark where the sound is to be "cut."

The final product is built by appending sections of audio one after another. Sections may be deleted as well, using the commands **Delete** and **Delete & Ripple.**

Segment Editing divides audio into individual events (Segments) that are treated independently. Segments may be moved freely within a panel or between different panels. Segments can be altered by changing their start and end points, the fade at either end, or by specifying the gain that will apply to that Segment during playback.

An editor is likely to use elements of both editing styles in a session. For example, a set of Destination panels that has been edited using the **Insert** and **Delete** commands may be viewed using the Text option. Sections of audio between cross-fades appear as Segments in the Text display.

I. Sync Groups, Edit Groups, and Edit List Preferences

The SonicStation uses a flexible system of grouping tracks that lets the editor work with audio in different formats (monaural, stereo, or multitrack) using Sync Groups and Edit Groups. The number of tracks also can be changed during an editing session, if needed.

When a new Edit List is created, it initially is assigned a certain number of panels. These are divided into different Sync Groups according to the values set for the Editing Model. The first two Sync Groups in the new Edit List are assigned to the Destination and Source Edit Groups, respectively.

The Editing Model

There are two user preference parameters that determine how tracks and panels are grouped when an Edit List is created. Both found in the **EDL Preferences** dialog.

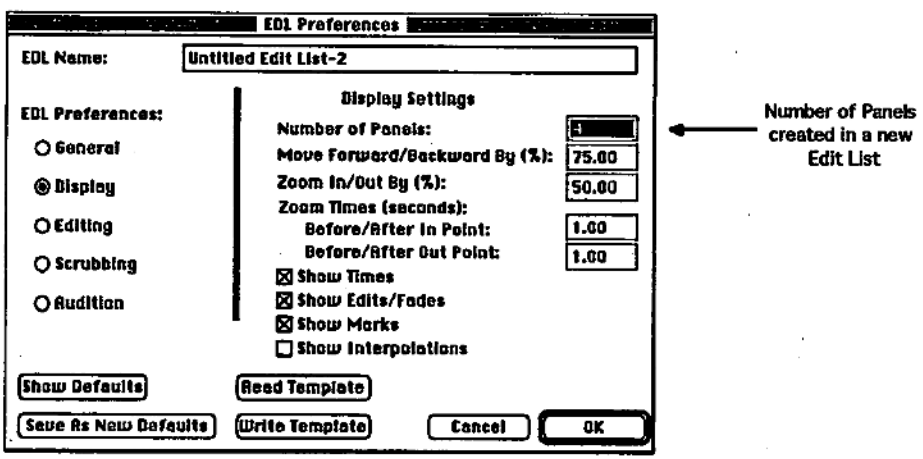


FIG. 9-1: The Number of Panels parameter in the Display section of the EDL Preference dialog, determines how many panels are created in a new Edit List.

- **Editing Model** determines how many panels are assigned to each Edit Group and Sync Group.
- **Number of Panels** determines how many panels are initially created.

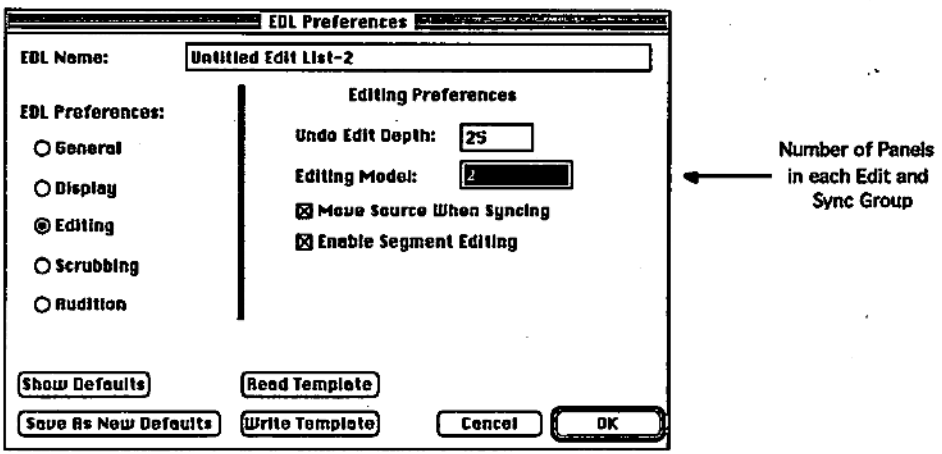


FIG. 9-2: The Editing Model determines how many panels are placed in each Sync and Edit Group.

To view and/or change the value set for the **Number of Panels** and the **Editing Model**:

- **Go to the File menu's Preferences item and choose Edit List Prefs... from the pull-right submenu, or use QuicKey Shift-F13.**
- **To view or change the Number of Panels, select Display from the group of radio buttons along the left side of the dialog.**
- **For the Editing Model, select Editing.**

The initial defaults are "4" for the **Number of Panels**, and "2" for the **Editing Model**. When a new List is created with these settings, it initially will have 4 panels. The top two panels are assigned to Sync Group "A" and the Destination Edit Group. The lower two panels belong to Sync Group "B" and the Source Edit Group.

II. The Edit Menu

The **Edit** menu contains a variety of commands, some of which are used for Insert and Delete Editing, some that apply only to Segment Editing, and several that could justifiably be assigned to either category.

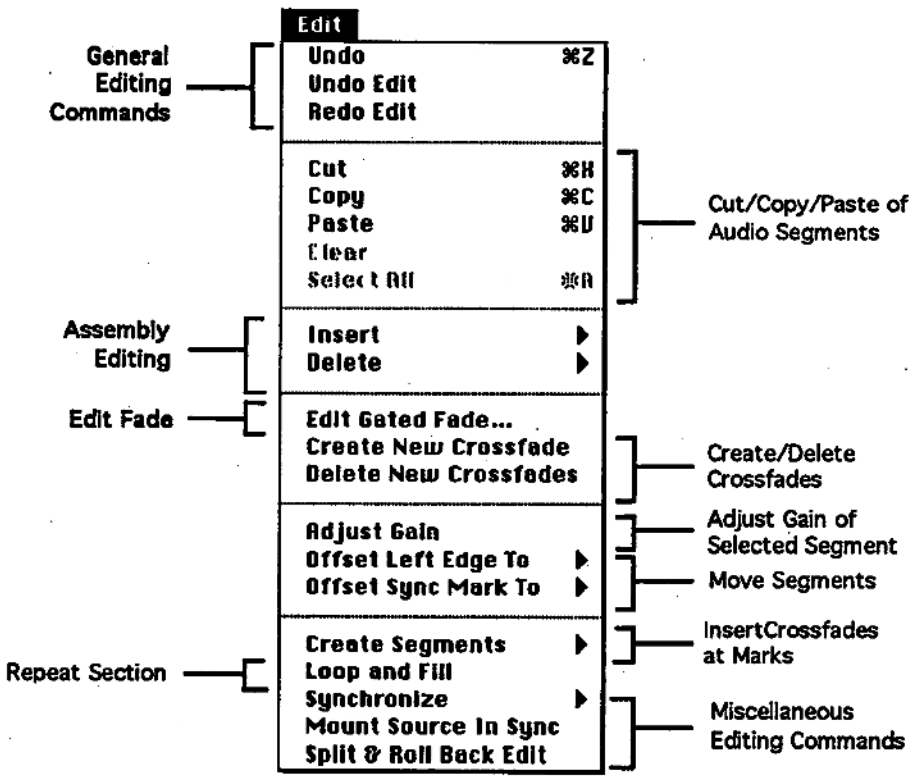


FIG. 9-3: The Edit menu contains a variety of commands. These are described in detail in this chapter and the next

This chapter, discuses the general commands (**Undo** and **Redo Edit**), **Insert** and **Delete**, and the **Edit Fade** window.

Undo and Redo Edits

The SonicStation keeps track of audio edits, and lets the user undo each edit by stepping back through them in order. The "depth" of the undo list is set in the **EDL Preferences** dialog.

Edit	
Cut	**⌘X**
Copy	**⌘C**
Paste	**⌘V**

The **Undo** command is the standard Macintosh Undo. It applies to operations such as **Move** and **Zoom** that do not actually alter the audio in a panel. The commands **Undo Edit** and **Redo Edit** are similar in operation, but apply exclusively to editing operations such as **Insert**, **Delete**, select Segment, etc. The standard **Undo** command has only one "level" of undo. When an action is Undone, the command changes its name in the menu into **Redo** (with the same command-key equivalent, ⌘-Z). **Undo** and **Redo Edit** can be executed many times, stepping backwards and forwards through a sequential list of edits performed.

In all of its editing operations, the SonicStation maintains a list of edits in the order they are performed. At any time, it is possible to undo not only the last edit performed, but each edit before that, and so on, for as many times as the **Undo Edit Buffer** size (set in the **Editing** section of **EDL Preferences**) allows. Likewise, all edits can be redone in order.

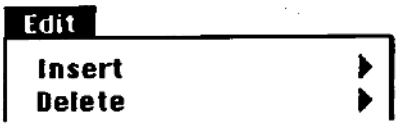
At any point of undoing and redoing edits, the current state of the Edit List can be saved. The SonicStation creates a new Edit List file each time a **Save** command is executed; these alternate versions of the Edit List can be opened and used at any time.

The **Undo** and **Redo Edit** commands are supplied with key equivalents. The basic **Undo** is "hard-wired," but the key equivalents for **Undo** and **Redo Edit** are supplied by QuicKeys.

- ⌘-Z — **Undo/Redo**
- Option-Z — **Undo Edit**
- Option-R — **Redo Edit**

Insert and Delete

The **Insert** and **Delete** commands are the heart of Assembly-style Editing. They are the computer equivalents of cutting and splicing tape.



Each of these two commands has several variations, which can be classified as Basic or Ripple versions of the core command (**Insert** or **Delete**)..

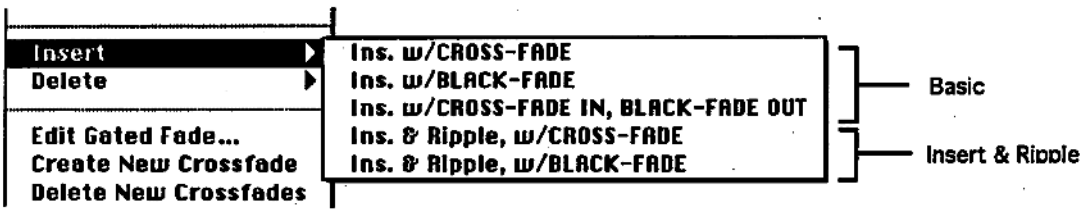


FIG. 9-4: The variations of the Insert command in the pull-right menu can be divided into Basic Insert and Insert & Ripple.

The different variations within these two types, **Insert** and **Insert & Ripple**, determine which of the default settings are used for the fades the Edit Points. Default fades are discussed in the section on the **Edit Fade** dialog.

The selection of (Basic) **Insert** or **Insert & Ripple** determines what happens to the audio that follows the edit. If the Basic **Insert** is used, the section that is inserted from the Source panels replaces the audio that existed previously in that section. Audio following the inserted section does not move, and the total length of the panel does not change, unless the inserted section is the last in the panel.

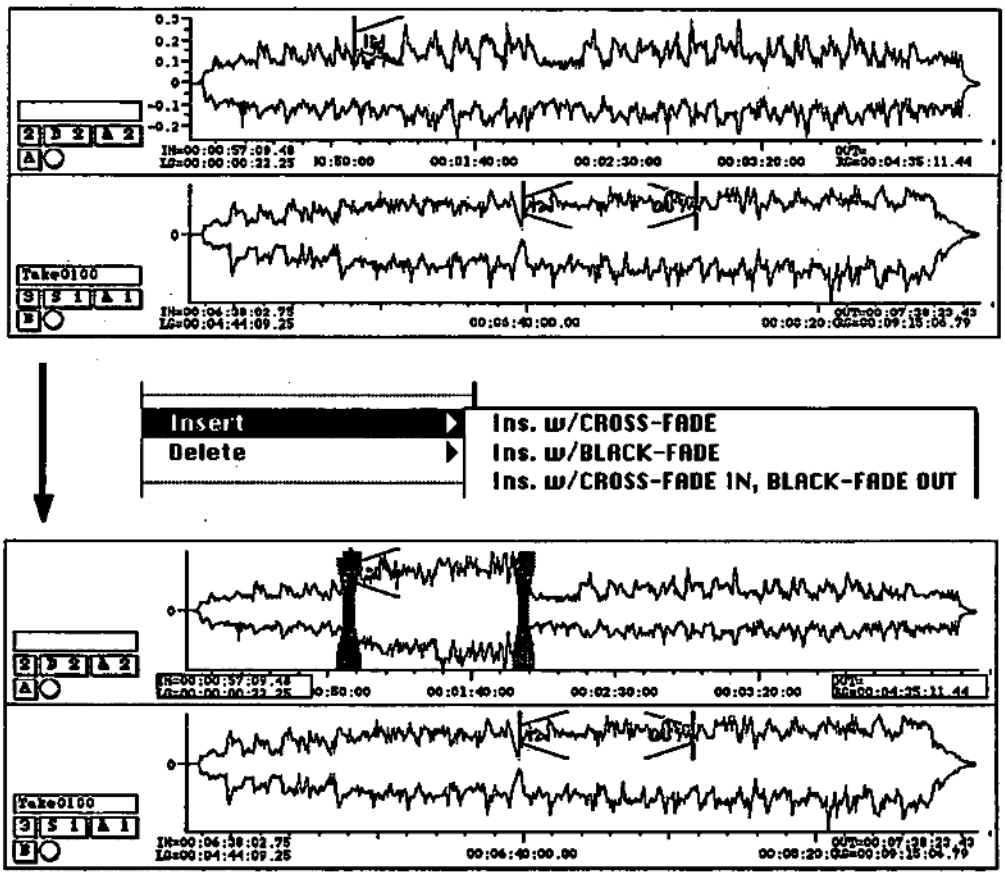


FIG. 9-5: **When a Basic Insert (no ripple) command is executed, a section of the Source panel is copied to the In point in the Destination panel, replacing previous audio.**

For the Basic **Insert**, there are two Edit Points (In and **Out**) in the Source panel(s), but only one (the In point) in the Destination panel(s). For this reason, the Basic **Insert** is known as a "3-point" edit. The length of the audio section replaced in the Destination panel is determined entirely by the length of the section between the In and Out points in the Source panels.

Implicit Edit Points

If some of the Edit Points required for an **Insert** or **Delete** command are not place in the Source and Destination panels, the system assumes that these points are "implicit," following a set of clear rules.

- If a needed In point is missing from a Source panel, the beginning of the track is used as the In point instead.
- If the Out point is missing from a Source panel, the end of the track is used

Insert and Delete with Ripple

When an **Insert & Ripple** command is executed, audio following the edit is displaced to the right on the display (later in time), changing the total length of the target panel.

Insert & Ripple may be executed as either a 3-point or a 4-point edit (In and Out points present in both Source and Destination). In the 4-point variation, the audio between the Edit Points in the Destination panels is replaced by the audio from the Source panel(s). Audio that comes after the Out point is slid left or right when the edit is executed.

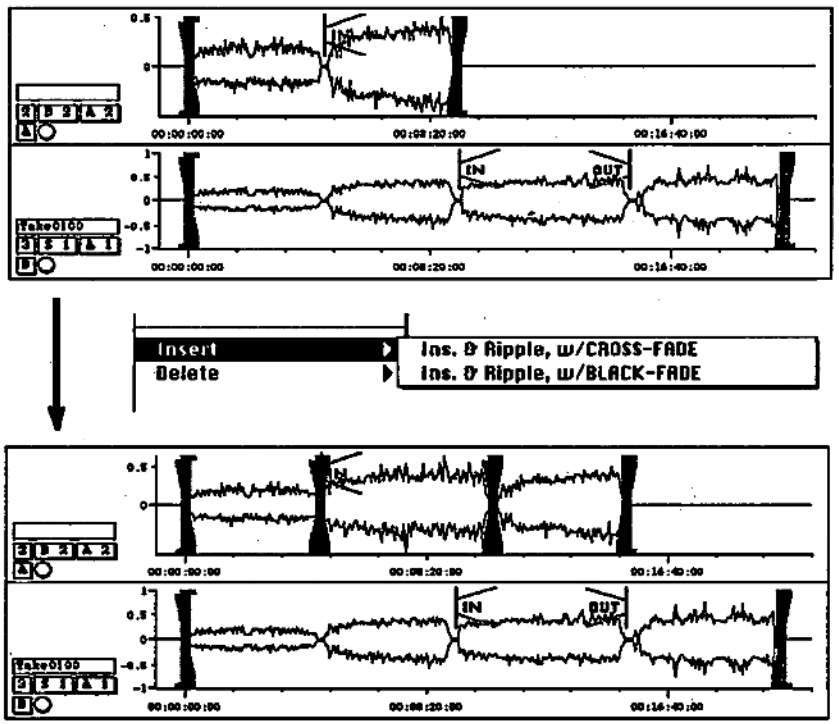


FIG. 9-6: When an Insert & Ripple is executed, the Source panel section is inserted at the In point in the Destination panel. Audio following the In point is displaced to the right.

The difference between the Basic **Insert** and **Delete**, and the **Ripple** variations, is that with **Ripple**, the total length of the track *always* changes. With the Basic command, overall length is affected only if the **Insert** or **Delete** comes at the very end of the track.

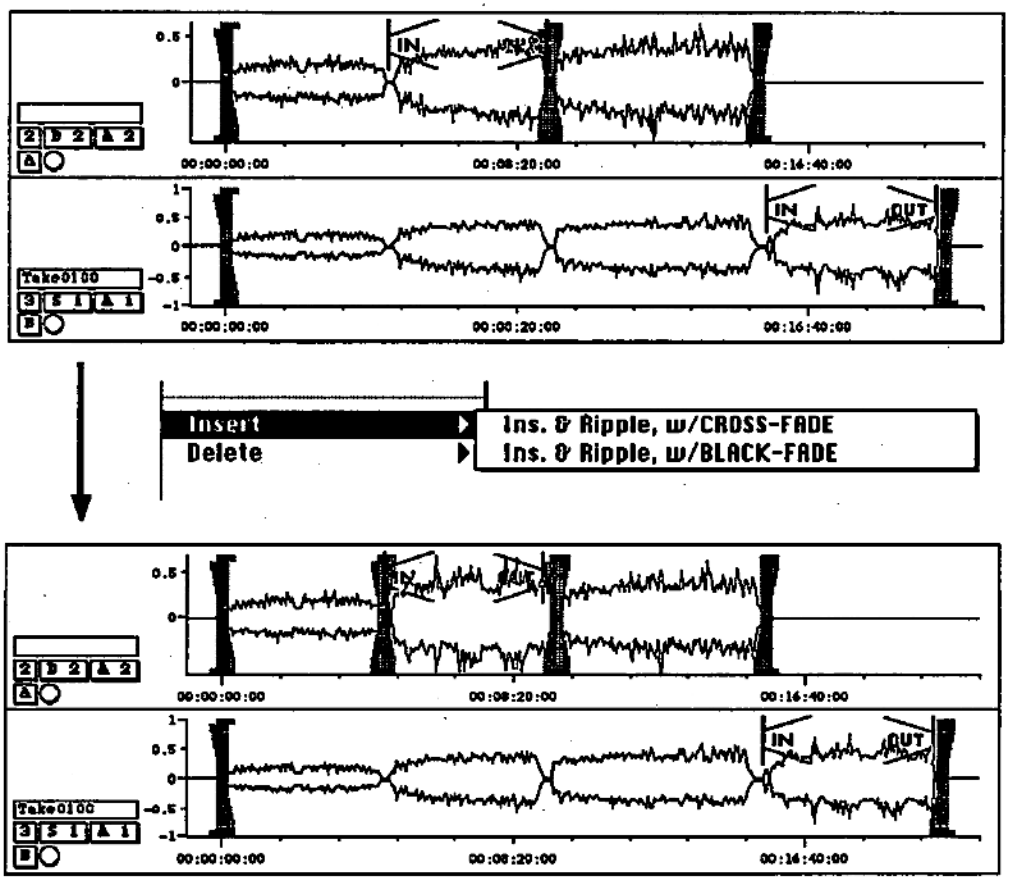


FIG. 9-7: If both In and Out points are present in the Destination panel(s), the Insert & Ripple command replaces the material between the Edit Points.

Like the **Insert** commands, the **Delete** command has a pull-right menu that lists variations of the core command.

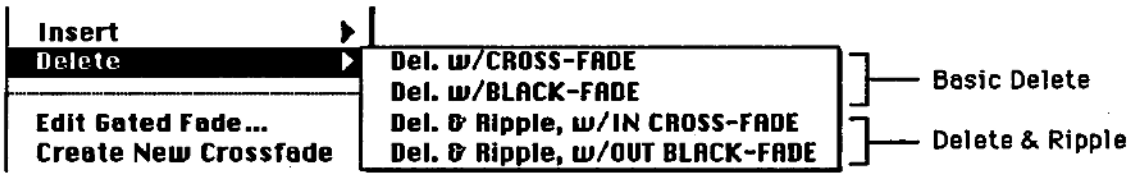


FIG. 9-8: The Delete command also has Basic and Ripple variations.

As with **Insert**, the two Basic **Delete** commands have sub-variations that select default settings for the fade(s) created by the edit. Default fades are discussed in the section of this chapter that deals with the Edit Fade window.

Delete operations differ from **Insert** operations in that the operation is performed on the target panel (or group of panels) without reference to a Source panel. **Delete** operations can be performed on any panel at any time. When the edit is performed, it affects all panels belonging to the same Edit Group, or to the same Sync Group if the Edit Group is **None**.

The Basic **Delete** command removes the designated section from the target panel. The deleted section is replaced by perfect (digital) silence.

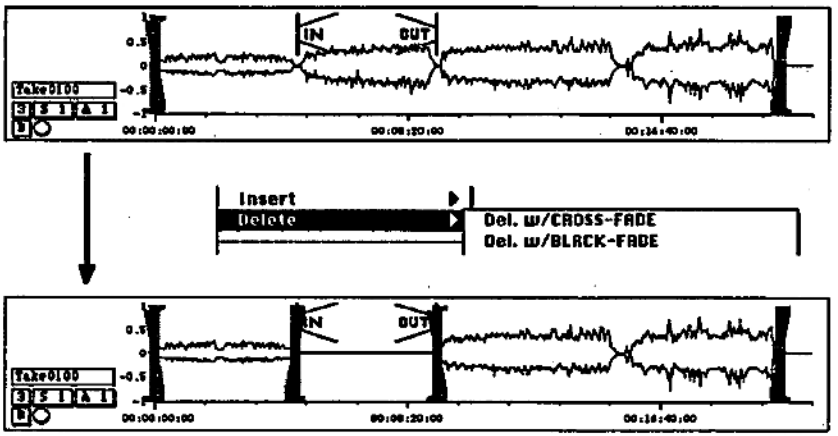


FIG. 9-9: In a Basic Delete command, audio between Edit Points is replaced with digital silence.

The **Delete & Ripple** commands delete the audio and then "close" the gap between the In and Out points. This can be useful in editing dialog or in sequencing cuts for CD mastering.

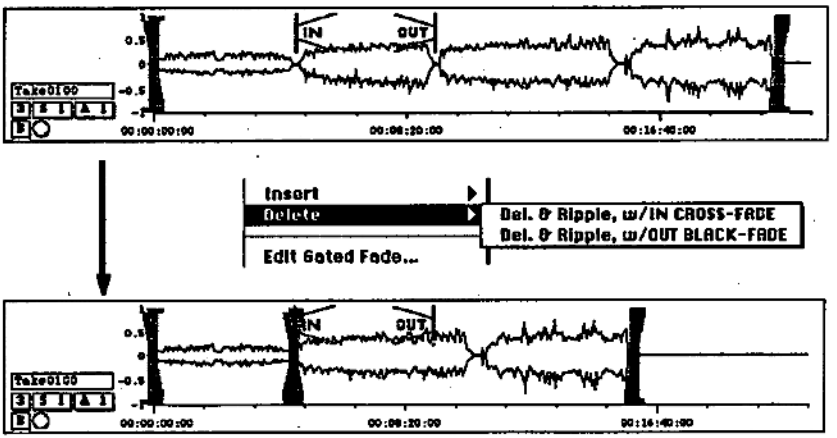


FIG. 9-10: Delete & Ripple commands cause audio following the edit to slide to close the gap left by the deleted material.

QuicKeys and the Editing Commands

As with most other commands on the SonicStation, the major editing commands are available either from the menus, or by means of key equivalents assigned via CE Software's utility program QuicKeys 2. (Installation of QuicKeys and the pre-assigned keyset is described in detail in Chapter 1).

SonicStation users are urged to use QuicKeys and to become familiar with the preassigned set.

Because the **Insert** and **Delete** commands (with their **Ripple** variants and different selections for the default fades) are central to editing on the SonicStation, they have been assigned to the first four function keys, F1 through F4. The four primary variations of **Insert** and **Delete** can be performed by simply hitting one of these keys.

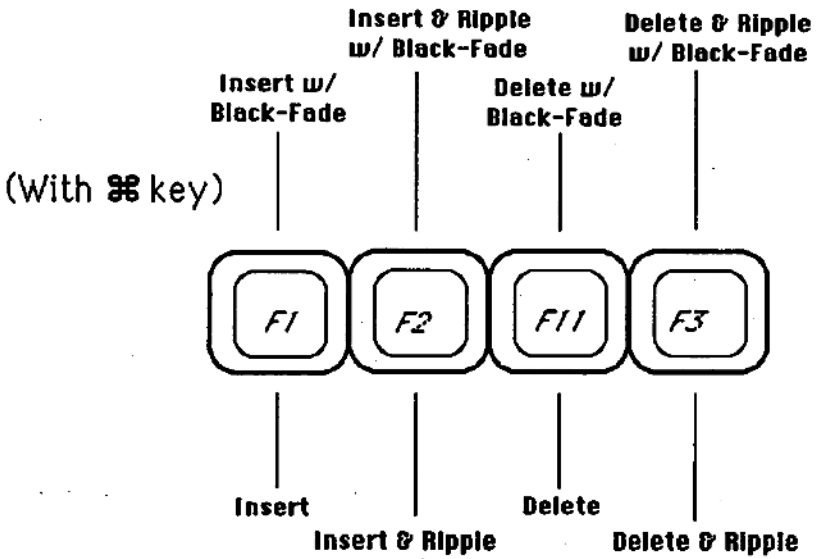


FIG. 9-11: The Insert and Delete commands are assigned in QuicKeys to the first four function keys.

The SonicStation has various default settings for the cross-fades at each end of an edit. By holding down the command (⌘) key while hitting the function keys, the same operations are available with different selections for the fades at the beginning and end of the edit.

III. The Edit Fade Window

Every edit on the SonicStation is marked by at least one fade. Wherever silence gives way to sound, and vice versa, a " single fade" (to or from silence) is produced. Where sound is joined to another section of sound, a cross-fade is created.

All the parameters of a fade can be adjusted over a broad range. The length of the fade, the shape of its curve, and the relationship of the start and end of the fade to the Edit point can be altered separately for each side of a fade.

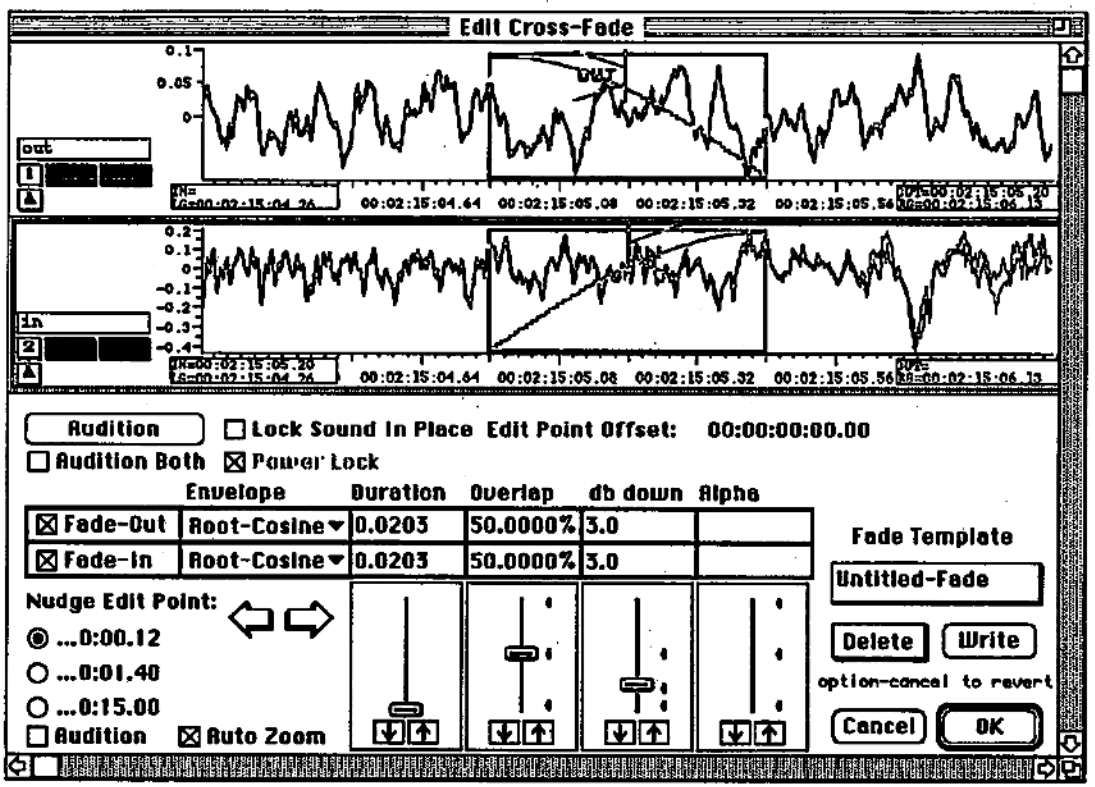


FIG. 9-12: The Edit Fade window provides control of every aspect of a splice.

To access the **Edit Fade** window from the Waveform Display:

- **Place the Left and Right Gates to either side of the fade that is to be edited.**
- **Pull-down the Edit menu and select Edit Gated Fade... .**

The QuicKeys equivalent to open the **Edit Fade** Window is:

- Escape **Edit Gated Fade...**

The **Edit Fade** window opens showing either one or two waveform panels, depending on whether the selected fades is a crossfade or a single fade up or fade down.

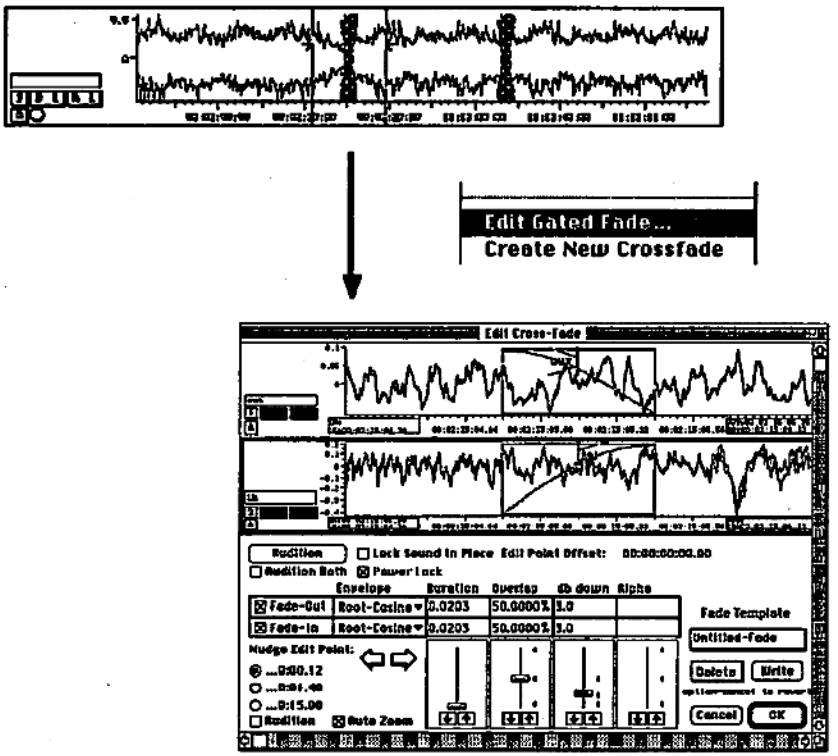


FIG. 9-13: The Edit Gated Fade command opens the Edit Fade window showing the waveform and parameter settings that apply to the fade framed by the Left and Right Gates.

The **Edit Fade** window is a comprehensive environment for modifying the way that an edit transitions from one side to the other, as well as the exact positioning of the Edit Points and audio on either side of the edit. Using this window, it is possible to tailor an edit in nearly any way imaginable.

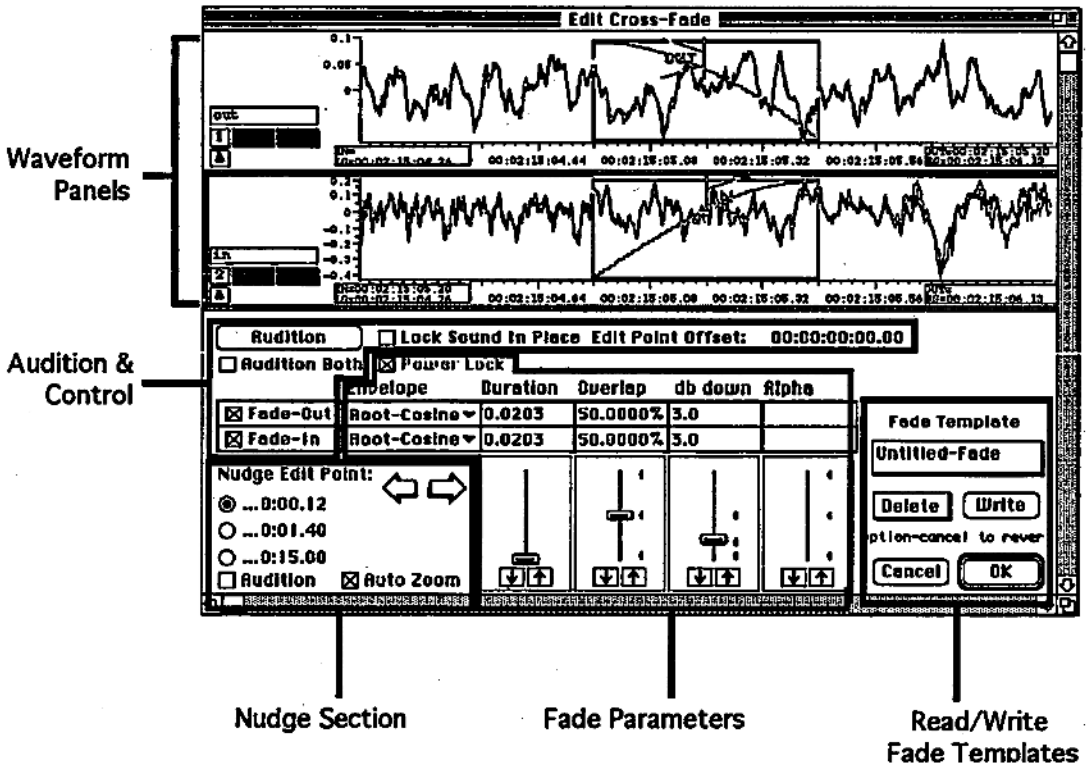


FIG. 9-14: The Edit Fade window is best understood by dividing its functions into different sections.

The **Edit Fade** window can be a little bit confusing at first. Remember that this window can affect three (and only three) aspects of an edit:

- The duration and shape of each fade (the fade-out of material ahead of the edit, and the fade-in of the new material following the splice).
- The time relationship between the start and stop of each fade.
- The placement of the sounds on either side of the edit.

The last two items are frequently the cause of confusion. It is sometimes difficult to know if:

- You are moving the position of a fade while holding the sound still underneath,
- Moving the sound while keeping the edit point steady in relationship to the previous sound, or
- Moving both sound and edit point together.

When editing a single fade (fade up from or down to silence), a single Panel appears in the **Edit Fade** window.

Waveform Panels

The waveform panels in the **Edit Fade** window behave much like panels in the editing display.

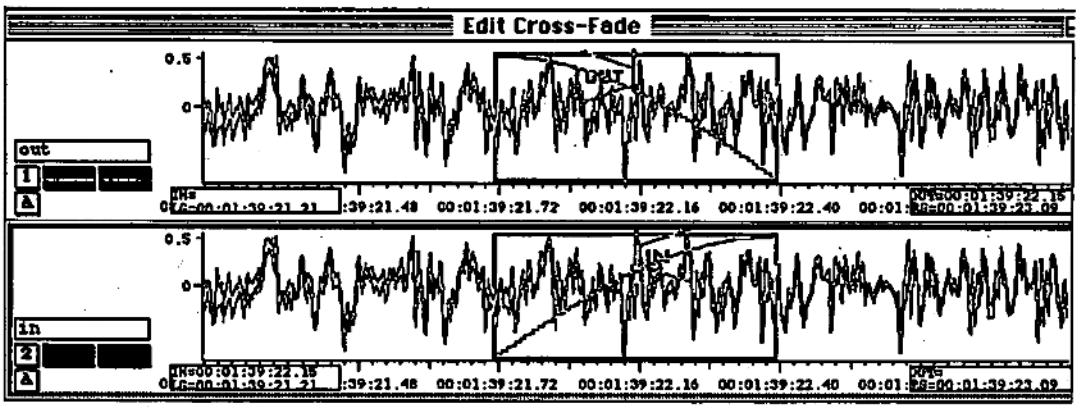


FIG. 9-15: The waveform panels in the Edit Fade window are similar to those in the normal editing display.

The Left and Right Gates are fully active in these panels, and all **Move** and **Zoom** commands can be used normally.

Edit Points (In and **Out**) can be placed in the **Edit Fade** window's waveform panels, following some special rules. The general-purpose editing marks are not available.

The Out point can be placed in the upper panel *only*, while the In point is only available in the lower panel. (Remember that these two panels represent the two sides of an edit in the same panel on the regular edit display).

It is important to note that the sound in the upper panel never moves when the position of the Edit Points changes. The audio in the lower panel may move if the **Lock Sound in Place** box is not checked (see below).

Audition and Control

The Audition & Control section of the Edit Fade Window determines whether one or both sides of the fade are affected by changes in the fade parameters or placement of the Edit Points. It also controls how sound in the lower (fade-in) panel moves in response to changes in the position of the Edit Points.

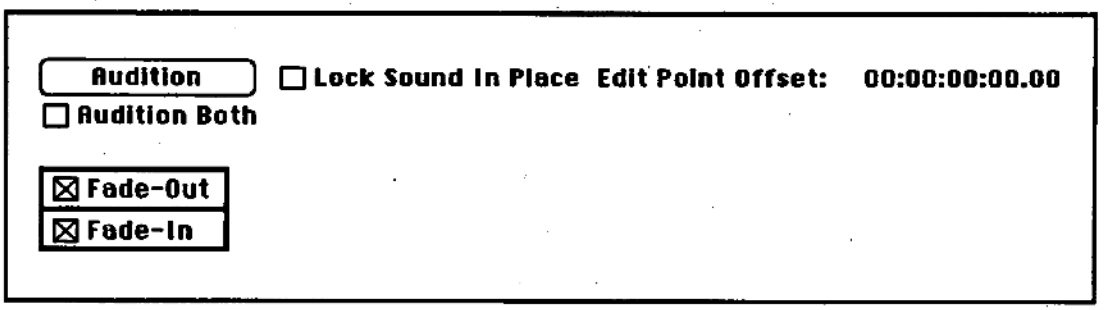


FIG. 9-16: The Audition & Control section determines the effect of parameter adjustments in other parts of the window.

The **Audition** button is used to hear the actual edit and fade, as modified in the **Edit Fade** window. Playback is affected by the state of the **Fade In**, **Fade Out**, and **Audition Both** checkboxes (described below) and the Audition Preferences set in the **Audition** section of **EDL Preferences**.

The **Play** menu commands can be used to listen to the selected panel without regard for the displayed fades. For example, the command **Play To Gates** will play the sound between the Gates regardless of where the fade is placed. The **Rock N' Roll** selection under the **Play** menu can be used to shuttle, jog or scrub the audio in the waveform panels.

☐ **Audition Both**

☒ **Fade-Out**
☒ **Fade-In**

These check boxes appear when editing a cross-fade. The **Fade-Out** and **Fade-In** boxes select which component or components of the fade will be affected by any changes.

The **Fade-Out/Fade-In** checkboxes also affect the operation of the **Audition** button. When both boxes are checked (the initial default), **Audition** plays both sides of the fade, so that the user hears the edit exactly as it will sound in the final product.

If only one of these is checked, the **Audition** button plays only that portion of the fade. By checking on the **Fade-Out** box, for example, the user can hear the lead-in to the edit, complete with fade-out. If **Fade-In** is checked, the user can hear how the audio fades up on the other side of the edit.

Sometimes it is desirable to hear the complete edit while adjusting one side or the other. The **Audition Both** checkbox overrides the operation of the individual checkboxes as they apply to auditioning.

Edit Point Offset: 00:00:00:00.00

The **Edit Fade** window lets the user change the locations of the In and Out points of an edit in relation to one another. The amount of time between the two points is the **Edit Point Offset**.

When an edit is first created, the In and Out points are both located at the same point in time, so that the **Edit Point Offset** is zero (00:00:00:00.00).

If either of the Edit Points is moved (by nudging, etc.) or placed in one of the panels in the **Edit Fade** window, an offset is created. This can be useful in controlling the separation of cuts while doing CD premastering, for example.

In the **Edit Fade** window, there are three ways to change the position of an Edit Point:

- Use the **Set In/Out point** menu selection under the **Edit** menu.
- Option-click on the Edit Point and directly change the value.
- Use the Nudge section of the window, described below.

☐ Lock Sound In Place

The state of this checkbox determines how the audio following an edit is affected when one or both of the Edit Points are moved or nudged.

The sound leading up to the edit is always fixed in place. (To do otherwise would mean that changing one point in the **Edit Fade** window could change everything that had gone before.) When the Out point is moved in the **Edit Fade** window, it actually moves to a different point relative to the audio itself.

The sound following the edit, on the other hand, can be treated in one of two ways. If **Lock Sound In Place** is not checked, then changing the location of the In point causes the sound to move while the In point retains the same position relative to the sound. If it is desired, for example, to open a gap between the two sides of an edit, it can be accomplished by moving the In point to a later time while **Lock Sound** is not checked.

If **Lock Sound In Place** is active, then moving the In point changes the position of the fade [[in the audio?]], but not the position of the sound [[in time?]]. This can be useful, for example, in editing sound for picture, because it preserves the synchronization between the following sounds and the remainder of the picture.

Nudge Edit

The Nudge Section of the **Edit Fade** window operates in a manner similar to that of the **Nudge Right** and **Nudge Left** commands in the **Mark** menu.

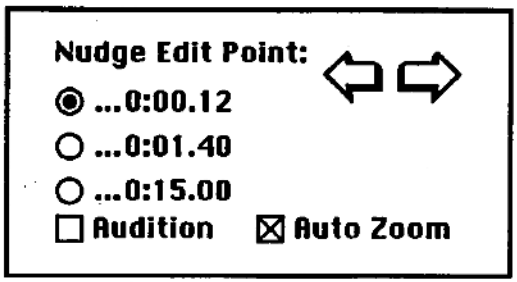


FIG. 9-17: The Fade-Out and Fade-In checkboxes determine which of the Edit Points will be nudged.

There are three radio buttons that select the amount of time by which the Edit Point will move, the **Fade-Out** and **Fade-In** checkboxes described earlier determine which of the Edit Points will be affected. Note that the **Lock Sound In Place** checkbox also plays a critical role in determining the effect of nudging.

If the **Audition** checkbox in this section is selected, an audition will be triggered immediately following each nudge. This makes it easy to judge when the Edit Point reaches the desired position.

The **Auto Zoom** checkbox affects nudging operations and adjustments to the fade parameters. With this box checked, the waveform panels will automatically move to keep the fade in view. If the duration of the fade is set so that the fade no longer fits in the window, the panel will zoom to enclose the new fade.

Fade Parameters and Templates

The SonicStation provides the most extensive control over cross-fading of any digital audio system. The exact duration, shape, and positioning of each side of a cross-fade can be controlled with ease and precision.

The same control applies to single-sided fades ("half-fade") where the audio fades to or from silence (digital black). When a half-fade is selected, the **Edit Fade** window opens with only a single waveform panel visible.

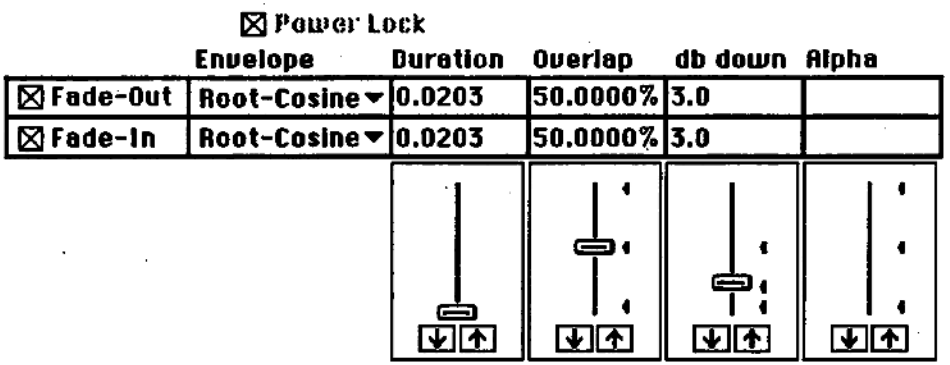


FIG. 9-18: The Fade Parameters affect the duration, shape, and positioning of each side of a cross-fade.

The **Fade-Out** and **Fade-In** checkboxes were described earlier in this section. Besides affecting the movement of the Edit Points, the state of these boxes also determines whether the Fade Parameter sliders affect both halves of a fade, or only one.

☒ Power Lock

	Envelope
☒ Fade-Out	Exponential ▾
☒ Fade-In	Root-Cosine ▾

Clicking on either of the **Envelope** boxes brings up a pop-up menu to select one of a family of curves that may be used for the fade.

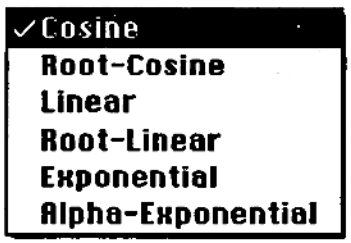


FIG. 9-19: The Envelope pop-up menu list 6 different curves that can be used for a fade.

There are three basic envelope types:

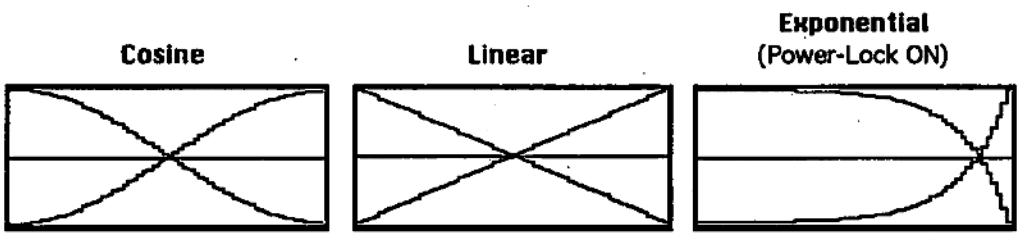


FIG. 9-20: All fade curves available on the SonicStation are derived from these three basic types.

The Cosine and Linear curves can be modified by the **dB Down** parameter (described below), while the Exponential curve can be modified by the **Alpha** parameter slider as well as the **Power Lock** checkbox. The remaining selections in the **Envelope** pop-up menu are variations of the basic curves derived by changing these parameters.

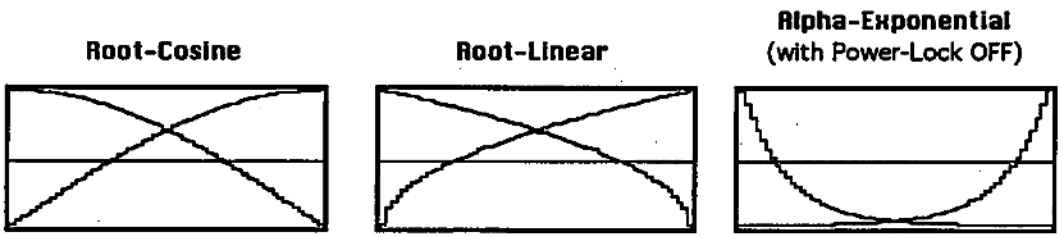
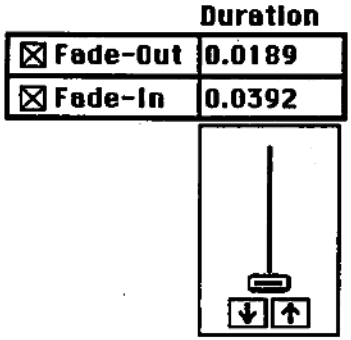


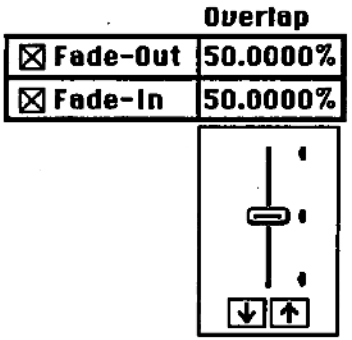
FIG. 9-21: Other curves can be produced by varying the dB Down parameter (for Cosine and Linear) or Alpha and Power-Lock for the Exponential curve.

The Root versions of Cosine and Linear are identical with the standard version, but with the **dB down** (see below) set to a value of 3.0. The **Alpha-Exponential** envelope is a variation of the standard exponential fade envelope that has the **Alpha** value set to 1.0.



The duration of the fade is expressed in seconds, with a range from 2.9 milliseconds (0.0029 seconds) to just over 100 seconds. Like the other Fade Parameters, the duration of each side of a cross-fade may be changed separately.

Unlike many digital audio systems, the SonicStation does all fades by controlling gain during playback. Long cross-fades do not require additional audio memory, and there is no time penalty as there is with systems that pre-compute the fades.



In the initial default setting, the fade-out and fade-in are placed so that the corresponding Edit Point is exactly half-way through the fade, for an **Overlap** factor of 50%. As the **Overlap** is adjusted, the fade slides left or right while the Edit Point remains fixed.

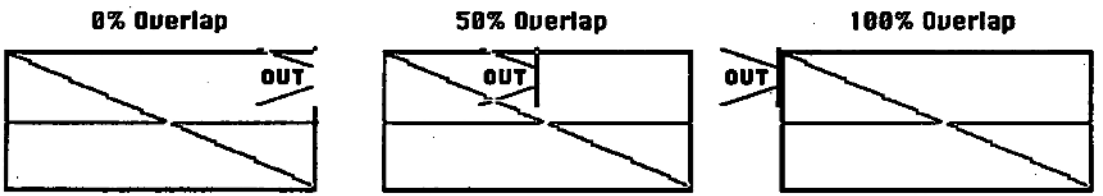
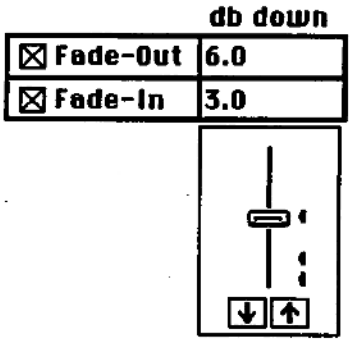


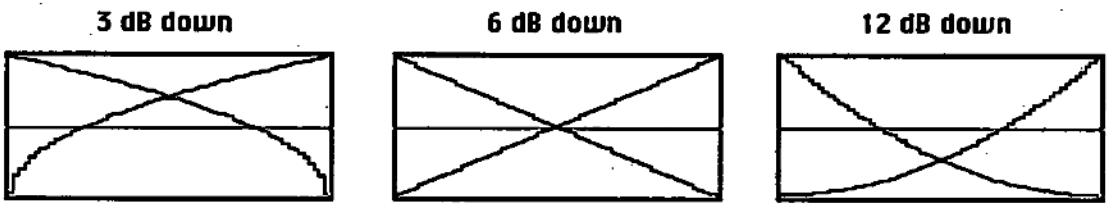
FIG. 9-22 The Overlap parameter controls where the start and end of the fade fall in relation to the Edit Point.

At O% **Overlap**, the end of the fade falls at the exact position of the Out point. 100% **Overlap** puts the *beginning* of the fade at the Edit Point.

For the fade-in, these relationships are reversed, so that the fade *ends* at the In point when the **Overlap** is set to 100%, and begins at that point when the **Overlap** is set to zero.



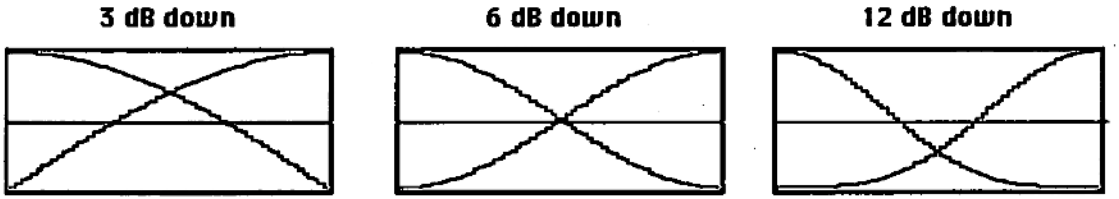
The **dB down** parameter affects *only* the Cosine and Linear fades. It sets an "anchor point" at the position of the Edit Point. The remainder of the curve is drawn in relation to this "fixed" point.



Linear Crossfade (50% Overlap)

FIG. 9-23: The dB down point fixes the gain of at the Edit Points. The curve on either side is drawn in relation to that point.

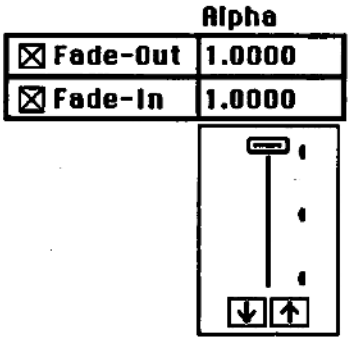
The Cosine fade follows the same rules.



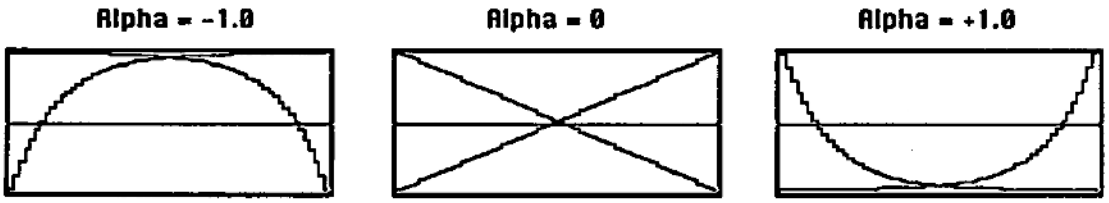
Cosine Crossfade (50% Overlap)

FIG. 9-24: The Cosine curve is affected by the dB down parameter in the same way as the Linear curve.

Because the point established by the **dB down** parameter is placed relative to the Edit Points, the shape of the curve is affected by the **Overlap** parameter as well.



The **Alpha** parameter affects *only* the Exponential curve. It controls the placement, in time, of the gain change produced by the exponential envelope. **Alpha** is a dimensionless parameter, whose range is -1 to +1.



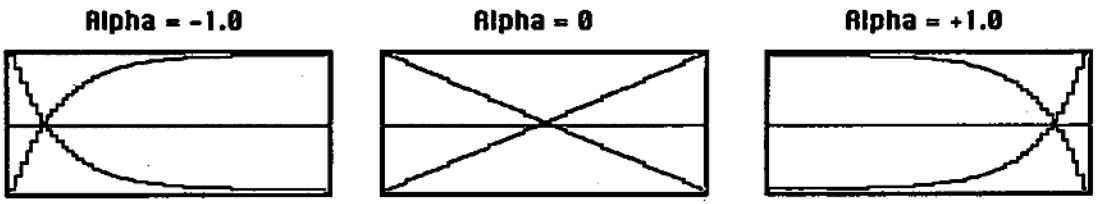
Exponential Crossfade (Power Lock OFF)

FIG. 9-25: The Alpha parameter alters the shape of the Exponential curve.

The straight Exponential cross-fade tends to produce either a large bump or drop in perceived level at the mid-point of the fade. The **Power Lock** check box can be used to produce, in effect, another type of curve.

☒ Power Lock

Power Lock affects *only* the Exponential fade type. When **Power Lock** is selected, the two curves are drawn so that one curve perfectly complements the other (presuming they are set to the same duration and the **Overlap** is 50%). At each point in the curve, the sum of the gains on either side of the fade equals unity.



Exponential Crossfade (Power Lock ON)

FIG. 9-26: The Power Lock checkbox sets the Exponential fade such that the fade-out complements the fade-in, maintaining unity gain at each point in the curve.

Fade Templates

Complete sets of fade parameters may be stored as Fade Templates. There are four permanent templates, and the user can add and delete his own templates as needed.

The Templates are stored and recalled using the buttons in the lower right-hand corner of the **Edit Fade** window.

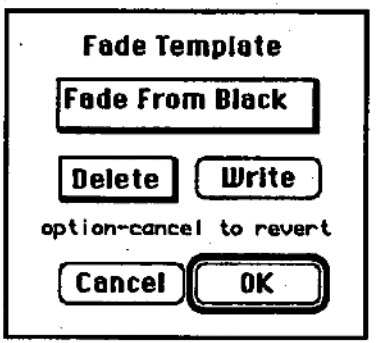


FIG. 9-27: The Fade Template section of the window is used to store and recall settings for audio fades.

To store an edited fade as a Fade Template:

- **Click-hold with the mouse on the Write button.**

A dialog box appears prompting the user to enter a name. The name of the current fade, whether default or previously stored, is displayed in the edit box.

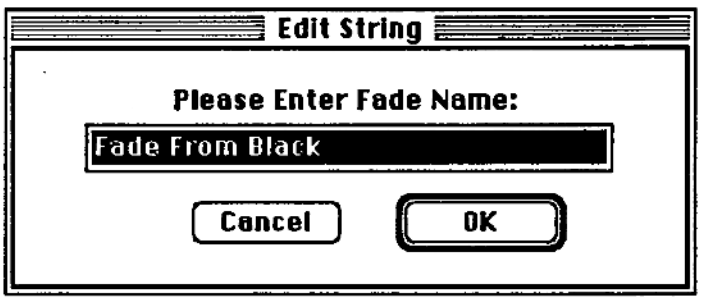


FIG. 9-28: When writing a Fade Template, the user is prompted to enter a name.

- **To overwrite the current Fade Template: Click OK.**

A Warning dialog appears to confirm the user's intention to overwrite the pervious Fade Template. If the user answers "Yes" to this warning, the new Template is written, and the previous Template of that name is permanently erased.

- **To create a new Fade Template: type in the new name, then click OK.**

The new Fade Template is added to the list that appears when the **Fade Template** button is used to recall a Fade Template.

To recall a default or previously stored Fade Template:

- **Click-hold with the mouse on the Fade Template button.**

A pop-up menu lists the available Fade Templates.

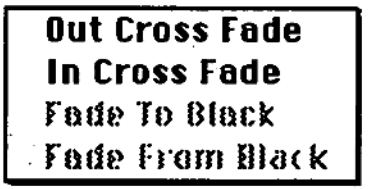


FIG. 9-29: Initially, the Fade Template pop-up menu lists the four default Templates.

- **Select the Fade Template to open.**

There are three kinds of Fade Templates: fade-in, fade-out, and cross-fade. Only Templates of the same kind as the current Template are shown as active.

The SonicStation has four default settings for fades. Two of these are cross-fades: **Out Cross Fade** and **In Cross Fade**. One default, **Fade From Black**, is a fade-in type, while **Fade To Black** is the default fade out.

The default settings can be altered by the user, but they cannot be deleted. When an **Insert** or **Delete** command is executed, it uses one or more of the default fades.

As additional Fade Templates are stored by the user, their names are added to the Fade Template menu.

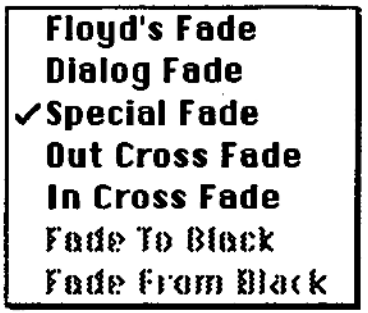


FIG. 9-30: User-created Templates are added to the menu along with the default fades.

To delete a stored Fade Template:

- **Click-hold on the Delete button.**
- **Select the Template to delete from the pop-up menu.**

A Warning dialog appears to confirm the user's intention to delete the Template. If the user confirms his intention by answering "Yes," the selected Template is permanently deleted from the list.

Fade Preferences

The **File** menu's **Preferences** item lists **Edit Fade Prefs...** in its pull-right menu. Selecting this user preference lets the user set the initial state of some of the **Edit Fade** parameters, such as the way that the window zooms on a fade, and the values of each of three nudge factors. It also provides a way for the user to modify the four default fades.

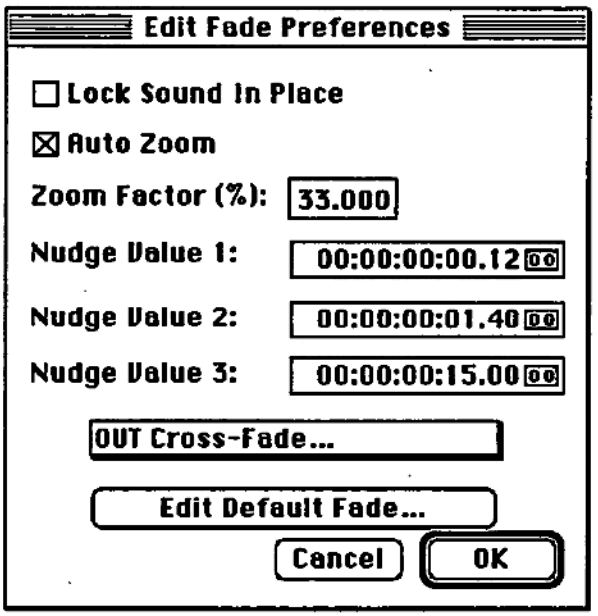


FIG. 9-31: The Edit Fade Preferences dialog is accessed from the File menu's Preferences item.

The first items in the **Edit Fade Preferences** dialog control the initial state of two of the window's most important operational preferences.

☐ **Lock Sound In Place**

Lock Sound In Place determines how changing the position of an Edit Point in the **Edit Fade** window affects the positioning of sound. The checkbox in the **Edit Fade Preferences** dialog determines the state of the checkbox when the **Edit Fade** window is opened.

☒ **Auto Zoom**

Zoom Factor (%): 33.000

Auto Zoom causes the waveform panels in **Edit Fade** to automatically change scales to fit a fade whose length or position have been changed so that they extend out of the (current) window.

When an automatic zoom occurs, it must scale itself to frame the fades appropriately. The **Zoom Factor** determines how much space, left and right, is left around the longer of the two fades.

Nudge Value 1: 00:00:00:00.12

Nudge Value 2: 00:00:00:01.40

Nudge Value 3: 00:00:00:15.00

The Nudge Section in the lower left corner of **Edit Fade** provides three selectable increments for nudging. The **Nudge Value** boxes in the **Edit Fade Preferences** dialog lets the user specify how much time will be used for a nudge.

OUT Cross-Fade...

Edit Default Fade...

The **Edit Fade Preferences** dialog also provides for editing of the four default fades. The setting of these fades is important because it determines how edits will initially occur. With the variations of **Insert** and **Delete** that use different default fades, the user can control the types of edits very easily.

To edit one of the default fades:

- **Click-hold on the button listing the name of the defaults.**
- **Select the default fade to be edited from the pop-up menu that appears.**
- **Click on the Edit Default Fade... button.**

The **Edit Fade** window appears, with the selected default fade displayed. The values of all of the Fade Parameters can be altered; when the window is changed, the new values replace those of the default.

Single and Asymmetrical Fades

When one section of audio is spliced to another, the result is a cross-fade. But when audio is inserted into silence, a fade-in marks the beginning of the sound segment, and a fade-out marks the end. Each of these fades can be edited with all the control and detail available for cross-fades.

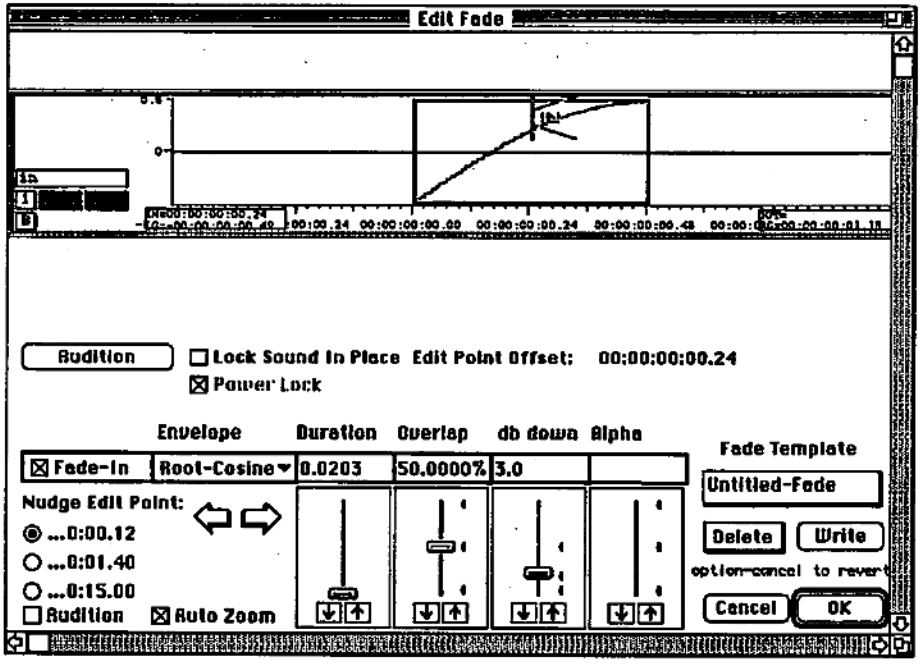
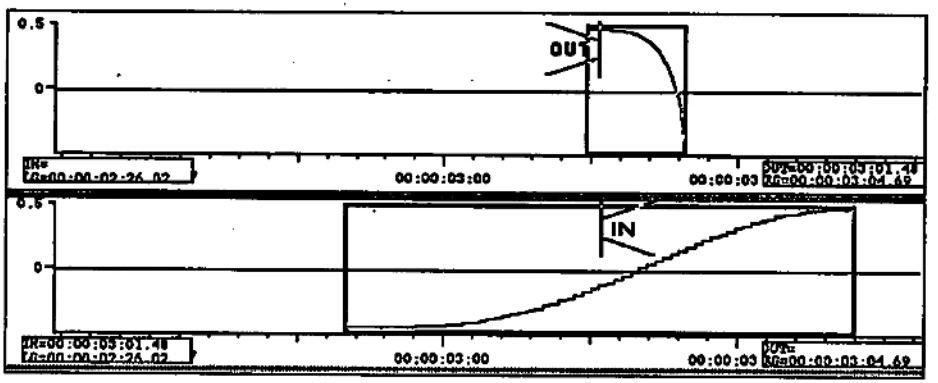


FIG. 9-32: Single fades are shown with a single panel and only the parameters that apply to the fade being edited.

When the **Edit Fade** window is opened on a single fade, only one waveform panel is shown, and the parameters that appear are the ones that apply to the fade being edited, whether it is a fade-in or a fade-out.

Asymmetrical Fades

In the examples on the previous pages, showing how the parameters of the **Edit Fade** window operate, the illustrations show fades that are symmetrical, with the same parameter values for each side of the fade. However, there is no need to restrain editing to evenly balanced cross-fades.



	Envelope	Duration	Overlap	db down	Alpha
☐ Fade-Out	Alpha-Expon	0.0348	83.5000%	6.0	0.8200
☐ Fade-In	Cosine	0.1741	50.0000%	9.3	

FIG. 9-33: Cross-fades may be set so that each side of the fade is very different from the other.

One of the SonicStation's most powerful features is it's ability to shape the two halves of a splice with complete independence. Features of the fade curves listed above may be combined differently for each side of the fade so that a splice might fade down very slowly, then suddenly attack. Or the fade-in of a section may be made to anticipate a faster fade-down of the tail of the previous section.

The **Edit Fade** window can create a kaleidoscope of audio transitions, and every transition that the editor creates can be stored for later recall as a Fade Template.

Summary

The **Edit** menu includes commands for Assembly Editing, as well as Segment Editing and miscellaneous editing functions.

Insert and **Delete** commands have two major variations, Basic and **Ripple**. Secondary variations on these two commands specify the default fades to be used in the edit.

The **Insert** and **Delete** commands use the Edit Points (In and **Out**) to specify from where and to where audio is copied. If one or more of the points needed to specify an edit are missing, an implicit Edit Point is used. Generally, this is either the beginning or end of the panel.

The **Edit Fade** window provides control of the duration, shape and placement of the fade-in and fade-out, as well as a means of modifying the placement of Edit Points in an edit that has already been executed. Different settings of fades can be stored as Fade Templates.

There are four default fades that are used whenever a new fade is created:

- **Fade From Black**
- **Fade To Black**
- **IN Cross-fade**
- **OUT Cross-fade**

These may be modified by the user, but they cannot be deleted.

Chapter 10

Editing with Segments and Text

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Introduction

Chapter 9 (Insert and Delete) describes the commands for splicing audio together in tape fashion. For editing, source audio may also be divided into Segments. A Segment is a section of audio from a source Sound File, with a beginning and end marked by a fade-in and fade-out. The fades may be edited using the **Edit Fade** window, as described in the previous chapter.

Segments may be placed anywhere in an Edit List. When a Segment is moved or copied to a new location, it retains the same start and end points. Segments can be treated as independent "snippets" of audio. Thus, the focus is on assembly of defined sections of material, rather than on the placement of each individual edit point.

Segment-style editing is most useful for jobs such as dialog and sound effects editing, in which individual sound events are placed with a moderate degree of independence.

Sound can also be edited using the TextList display format. Whether sounds are placed using **Insert** and **Delete** commands or by Segment-oriented commands, the resulting panels can be displayed and edited in the form of a list of Segments with start and end times for each.

The full power of editing with the SonicStation is realized by combining elements of all three major styles of editing; Insert/Delete, Segment, and TextList.

I. Segment Editing

Editing with Segments is not very different from editing using **Insert** and **Delete** commands. It's mostly a matter of orientation.

- With **Insert/Delete**-style "assembly" editing, the emphasis is on carefully splicing different pieces together to achieve a seamless flow.
- In Segment editing, each piece of sound is a separate entity, to be moved or altered on its own, independent of surrounding audio.

Defining Segments

A Segment is any section of audio that is terminated by a fade at each end.

When a Sound File is opened into an Edit List, it constitutes one large Segment. Whenever an editing command creates a new fade, one or more new Segments are created. When audio is assembled, each newly inserted section becomes a Segment, which can then be moved or edited as an independent piece of sound.

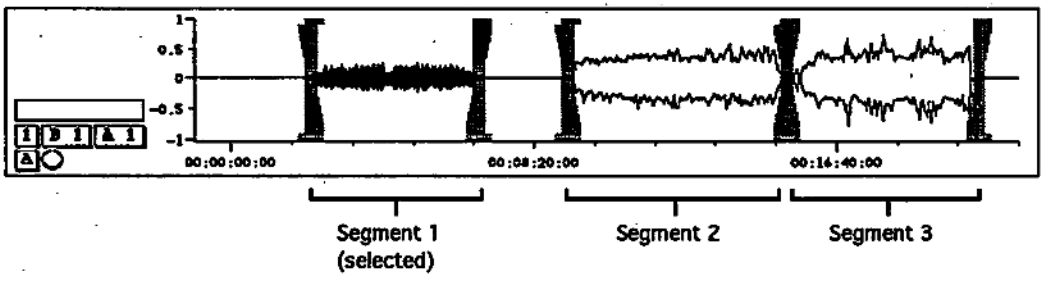


FIG. 10-1: Segments are defined by fades and crossfades.

In addition, Segments may be created by using Editing Marks and menu commands to insert crossfades in audio. These new fades become "cuts," dividing continuous audio into separate pieces. The audio on either side of the new fade becomes a pair of new Segments.

When a crossfade is created, it is treated as a single entity composed of the fade-out and fade-in. If the Segment on either side of the new crossfade is moved, however, the crossfade separates into two fades.

Selecting Segments

A Segment must be *selected* (highlighted) before Segment editing commands will affect it. Most Segment-oriented operations are defined by holding down the Option key.

To select a Segment:

- **Option--click at or near the vertical middle of the Segment to be selected.**

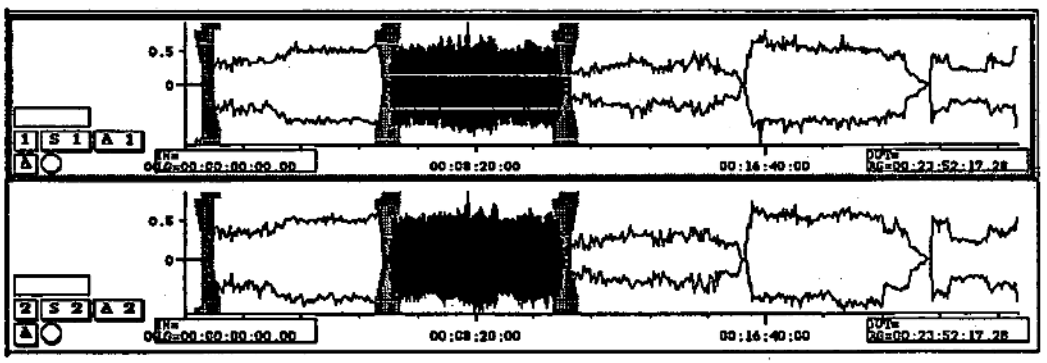


FIG. 10-2: "Option double-click" selects corresponding segments in all panels of an Edit Group.

This selects the Segment clicked, as well as the corresponding Segment in other panels of the same Edit Group. Other Segments in other panels of the same Edit Group are selected if they overlap with the last half of the selected Segment.

To de-select all Segments:

- **Hold down the Option key and click a Segment that is already selected.**

All Segments in the edit group are de-selected at once. This is a handy way to clear Segments that have been previously selected and then moved out of the field of view.

To select a Segment without deleting others in the same Edit Group:

- **Shift-Option-click the Segment you wish to select.**

This action also adds the target Segment to others that are already selected, so that non-adjacent Segments may be grouped together.

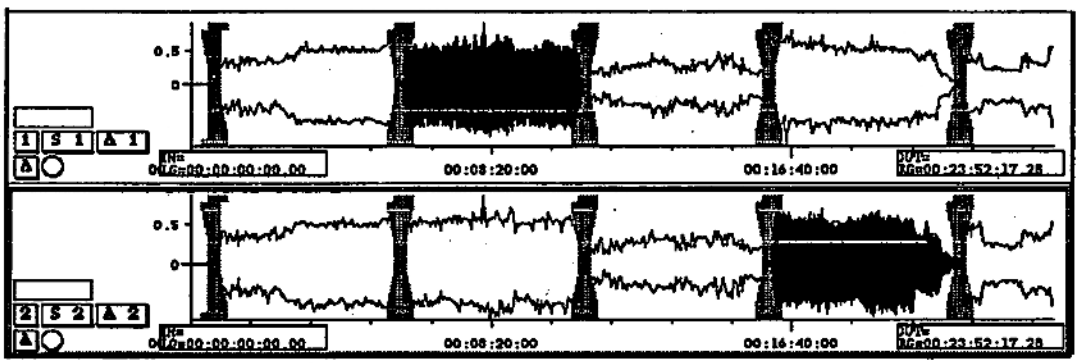


FIG. 10-3: "Shift Option double-click" is used to choose single Segments, and to create groups by leaving the previous Segments selected.

To de-select a single segment without affecting other selected Segments:

- **Shift-Option-click the Segment you wish to de-select.**

This de-selects a single Segment without de-selecting other Segments in the group.

Dragging Segments

To move a Segment to a new position in the panel by dragging:

- **Select the Segment or Segments to be moved.**
- **Hold down the Option key and click-hold on the Segment.**
- **Holding the mouse button down, drag the mouse to the left or right.**

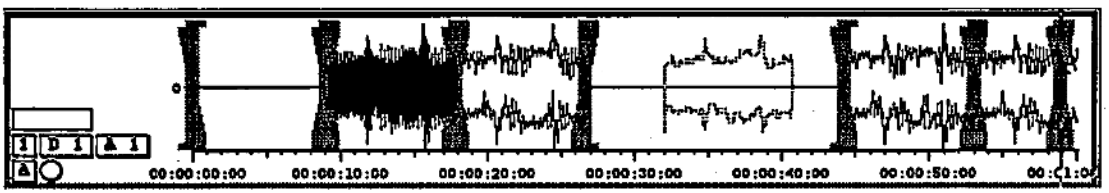


FIG. 10-4: When a Segment is dragged (Option click-drag) within a panel, a "ghost" image of it is visible.

An outline of the selected Segment(s) will be seen to move on the screen, along with the cursor. Drag the cursor to the desired position and release the mouse.

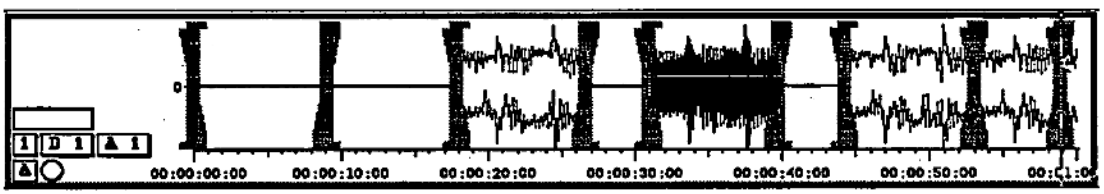


FIG. 10-5: When the mouse button is released, the Segment drops into its new position.

The selected Segment or Segments appear(s) in the new location.

Overlapping Segments

Segments can be dragged and placed over other Segments on the same panel. This works because a single panel can play two sounds at once. This also occurs during a crossfade. During the fade, parts of two different sounds are heard.

The ability to overlap Segments is powerful, but the potential exists for confusion because the user cannot always distinguish easily between three segments and two that overlap.

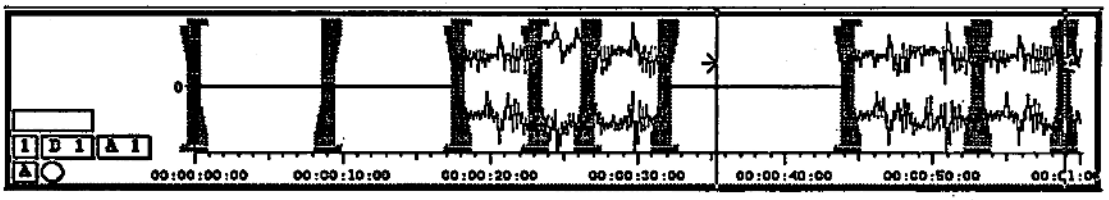


FIG. 10-6: A possibly confusing edit. The section in the middle looks like three separate audio segments, but it is actually two segments that overlap.

NOTE: The Text display feature can be used to clarify situations of overlapping Segments

Legal and Illegal Placement

A single panel *cannot* play three or more sounds. If the operator tries to perform an edit that would result in three sounds in the same place on the panel, the system will give a "triple overlap" error message.

A triple overlap will occur, for instance, if a sound is moved over an existing crossfade, or where two Segments have been previously placed so as to overlap

II. The Edit Menu (continued)

Most of the commands in the Edit menu can be used with Segments.

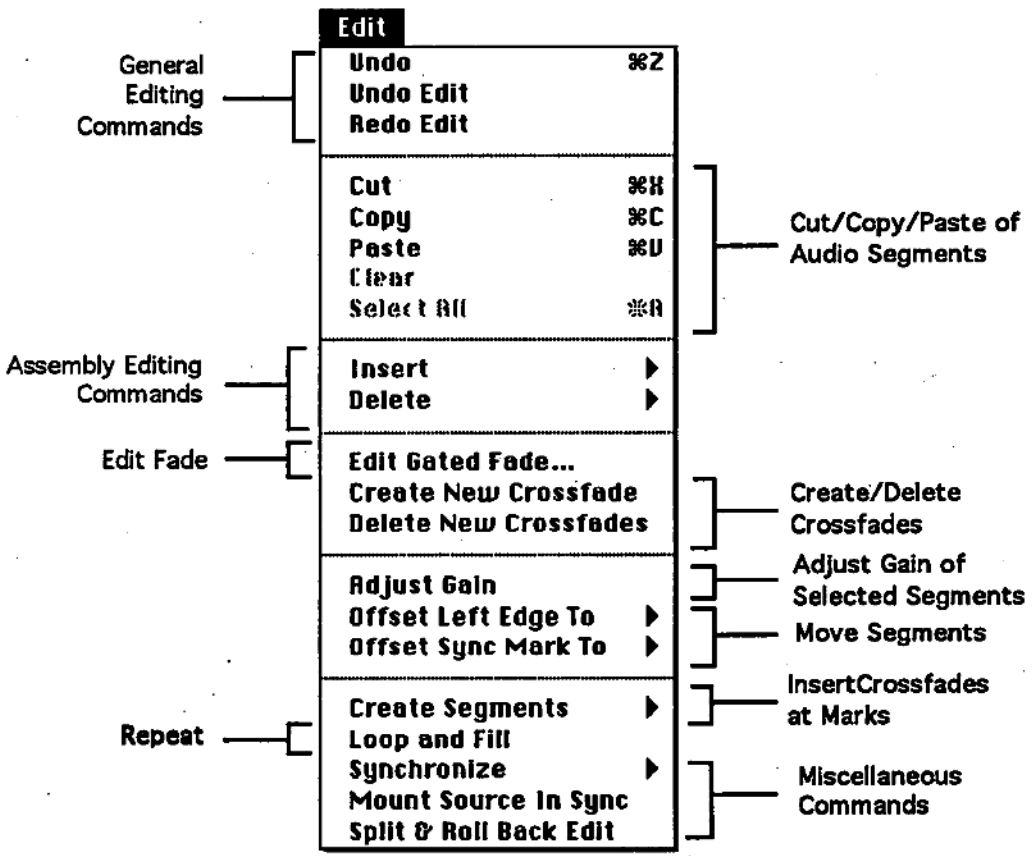


FIG. 10-7: Most of the Edit menu commands work with Segments. Some commands work exclusively with Segments, while others may be used with In/Out points or Segments.

Cut, Copy, and Paste Commands

Macintosh-style **Copy** and **Paste** commands can be used to move Segments between panels.

Edit	
Cut	⌘X
Copy	⌘C
Paste	⌘V

Selected Segments are cut or copied from one panel and pasted into another. The location at which the audio is pasted depends on the whether or not any Segments are selected in the target panel and whether an In point is set in it.

To Cut or Copy audio from a panel:

- **Select the Segment or group of Segments to be Cut or Copied.**
- **Select Cut or Copy from the Edit menu, or use the key equivalent.**

The key equivalents for all three commands are the same as for general Macintosh applications.

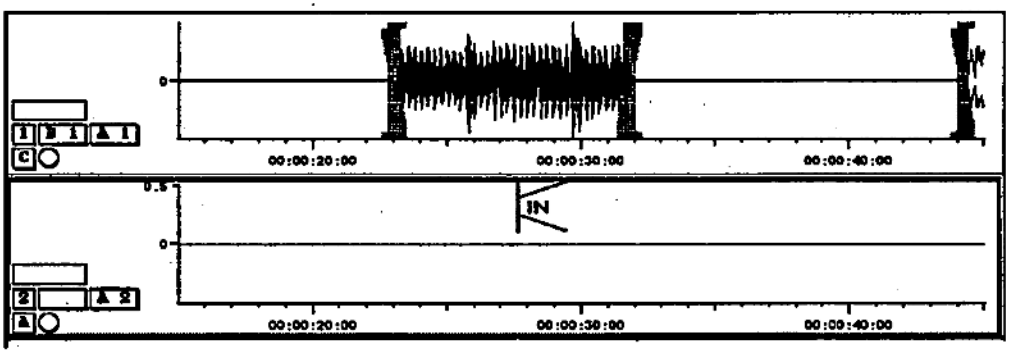


FIG. 10-8: A selected Segment may be Copied [⌘-C] or Cut [⌘-S]

If **Cut** is selected, the selected Segment(s) are deleted from the source group of panels.

Panel Grouping

Segment editing operations do not necessarily follow the Edit Groups used for **Insert** and **Delete** commands. The rules that define which panels or panels will be affected by Cut, Paste and other Editing commands are as follows:

- *If* the *selected* panel belongs to either the Source or Destination Edit Groups, the Segment operation affects that panel and other panels in the same Edit Group.

This rule governs most ordinary editing situations.

- *If* the selected panel is not assigned to an Edit Group (Source or Destination), the command affects the selected panel and all panels in the same Sync Group (A, B, C, etc.).
- *If* no panels are selected, the command operates on all Destination panels
- *If* there are no selected panels *and* no Destination panels, the command operates on Panel 1 and all panels that are in the same Sync or Edit Group as Panel 1.
- *If* the command is one that requires both a Source and a Destination, then only Source and Destination panels are used.

These rules govern most of the editing operations on the SonicStation. Some, commands such as **Insert** and **Sync To Matching**, require that both Source and Destination panels be specified before performing the edit. Commands such as **Offset**, **Edit Gated Fade**, and **Create Segments** will operate on the selected panels as described above.

Pasting a Segment

After a Segment has been Cut or Copied from a source panel, it can be Pasted in a target panel

To Paste an audio Segment into a target panel:

- **Determine the location at which the Segment is to be placed.**
- **Mark this point by (a) placing an In point, or (b) selecting a Segment in the target panel (to be replaced).**
- **Select Paste from the Edit menu, or use the key equivalent (⌘-U).**

If there is an In point in the panel that is the target of a paste, the left edge of the Segment or Segments are placed at the In point

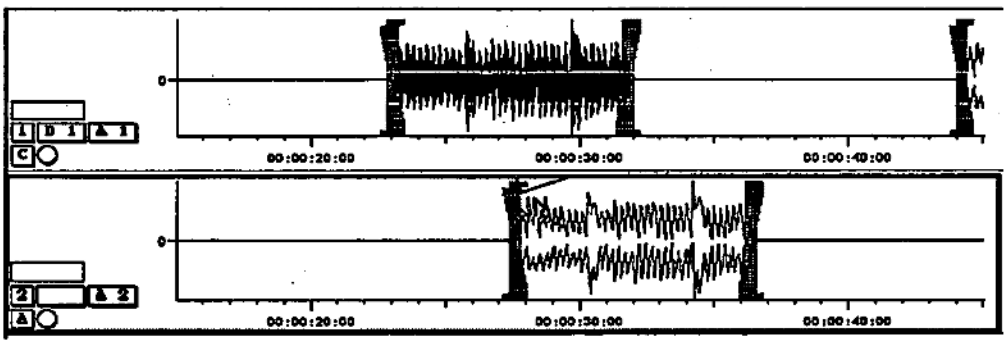


FIG. 10-9: Paste (⌘-U) places the Segment in the Mac clipboard at the In point in the selected panel.

If there are selected Segments in the panel that is the target of a paste, then they are deleted and the pasted Segments are placed at the starting time of the deleted Segments.

If there is no In point and no selected Segments in the target panel, then the Segment on the Clipboard is placed at the exact same location it occupied in its source panel.

Other Editing Commands

The remaining commands in the **Edit** menu are divided across several categories. They are described here in the order they appear, rather than by function.

Creating Segments by Adding Crossfades

Crossfades can be placed in a panel so that an originally seamless Sound File is divided into Segments.

Create New Crossfade places a fade at the In point in the selected panel and all panels in the same Edit Group, thus splitting a single segment into two.

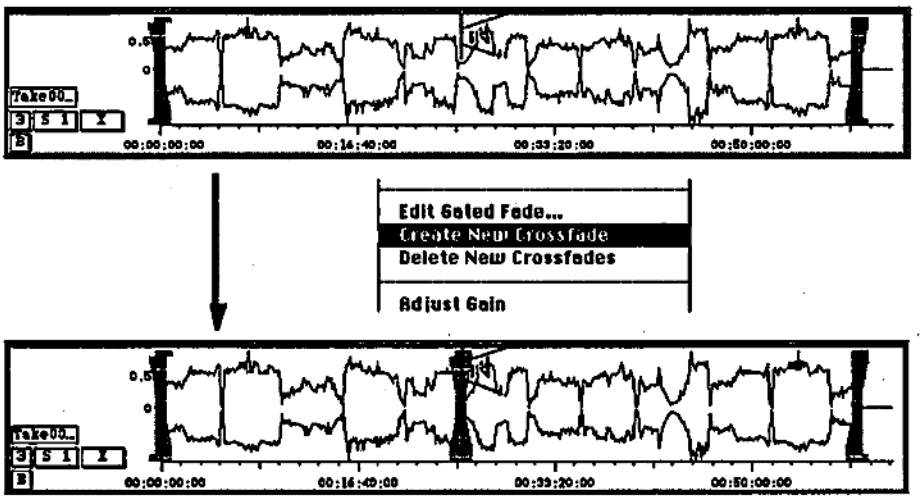


FIG. 10-10: Create New Crossfade can be used to divide a single Segment into two Segments. The Crossfade is placed at the In point of the Source panel or panels.

Delete New Crossfades can be used when a fade is placed in error. It deletes a fade or fades that are between the Left and Right Gates.

NOTE: A new crossfade can be deleted only so long as it has not been edited. As soon as any change is made to a fade, it cannot be deleted with this command. (You can still use the Undo Edit command, however, to back up through the series of edits.)

As with other editing commands, key equivalents for **Create New Crossfade** and **Delete New Crossfades** are provided by way of QuicKeys.

- ⌘-esc — **Create New Crossfade**
- Option-esc — **Delete New Crossfades**

Changing Gain

The audio in a panel can be boosted by up to +24 dB, or cut to infinity. Gain can be applied to an entire panel or only to selected Segments. The gain changes are stored with the Edit List; the waveform display shows the results of the change.

Edit

Adjust Gain

Adjust Gain brings up a dialog to set the gain value. The gain selected is applied to the selected Segment(s), or if no Segments are selected, gain is applied to the panel as a whole.

To change the gain of an entire panel:

- **Make sure that no Segments are selected.**

To make sure, use the pop-up menu that comes up under the circular indicator at the lower left side of the panel

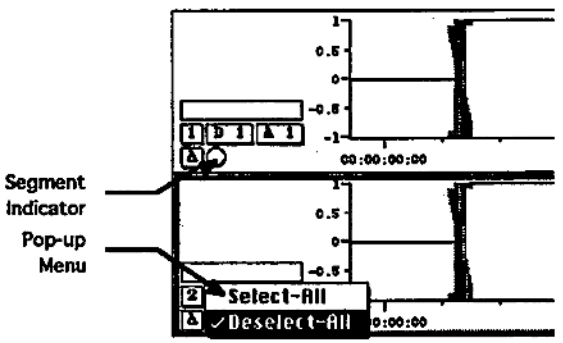


FIG. 10-11: The circular Segment indicator in the left-hand area of each panel bring up a pair of commands to select or de-select all Segments in the panel.

- **Select Adjust Gain from the Edit menu.**

OR **Use the QuicKeys equivalent, ctrl-esc.**

A dialog box appears to set the gain value to be applied.

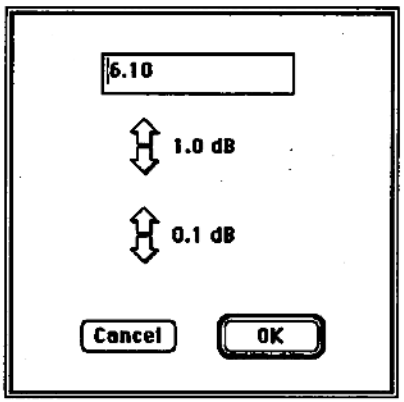


FIG. 10-12: The Adjust Gain dialog specifies a gain value in increments of one-tenth of a dB.

The gain value is entered using the 1 dB and 0.1 dB nudge arrows. Gain can range from +24 dB down to minus infinity.

- **Click OK to apply the selected gain.**

The waveform display will change to reflect the new gain value.

To change the gain of an individual Segment or group of Segments:

- **Select the Segment or Segments to be boosted or cut.**
- **Select Adjust Gain and proceed as above.**

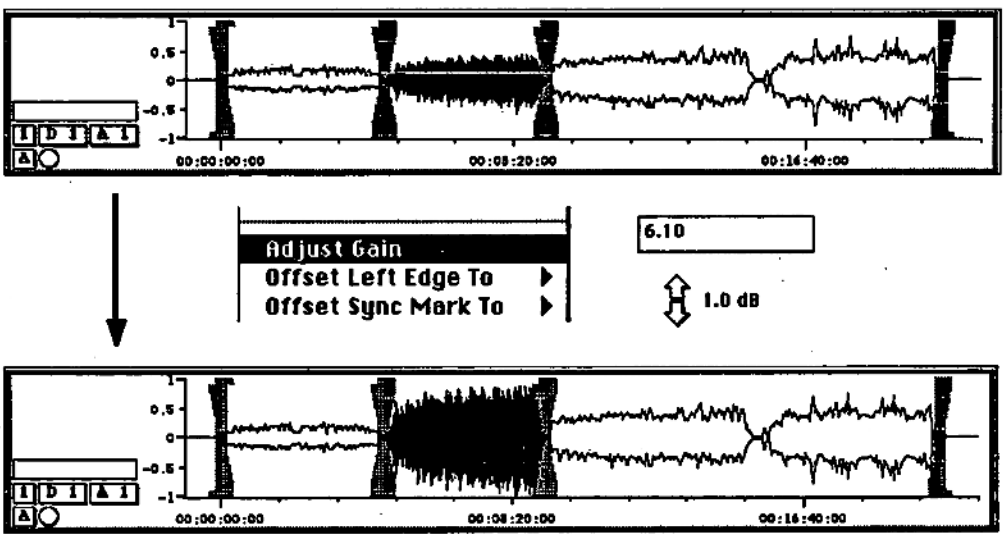


FIG. 10-13: Adjust Gain may be used to change the level of a single selected Segment or an entire panel.

Gain changes are completely non-destructive, and can be undone just like any other audio edit. Also, because the source audio is never actually changed (just boosted or cut on playback), clipping is completely reversible.

Sliding Tracks

The audio in a panel can be moved forwards or backwards in time. This operation can be applied to a Segment or group of Segments, or to the track as a whole.

These commands move the audio in a panel by moving a reference point, either the left edge of the Segment or Panel, or a Sync Mark that has been placed in the display, to a new point in time, designated by a pair of variations listed in a pull-right submenu.

When the **To Wherever** variation of either command is selected, a dialog appears to accept a new time value to which the designated reference point will slide.

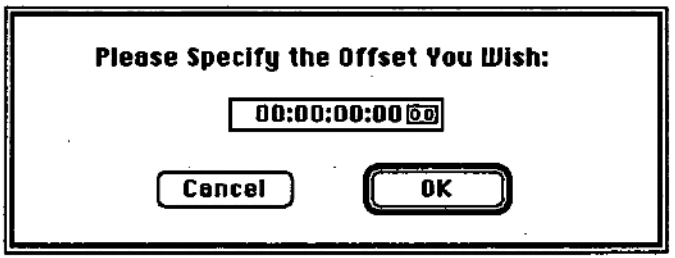


FIG. 10-14: The commands Move Left Gate or Move Sync Mark To Wherever accept a time value for the placement of the reference point.

When **To Left Gate** (either command) is selected, the reference point (left edge or Sync Mark) is moved to the current position of the Left Gate.

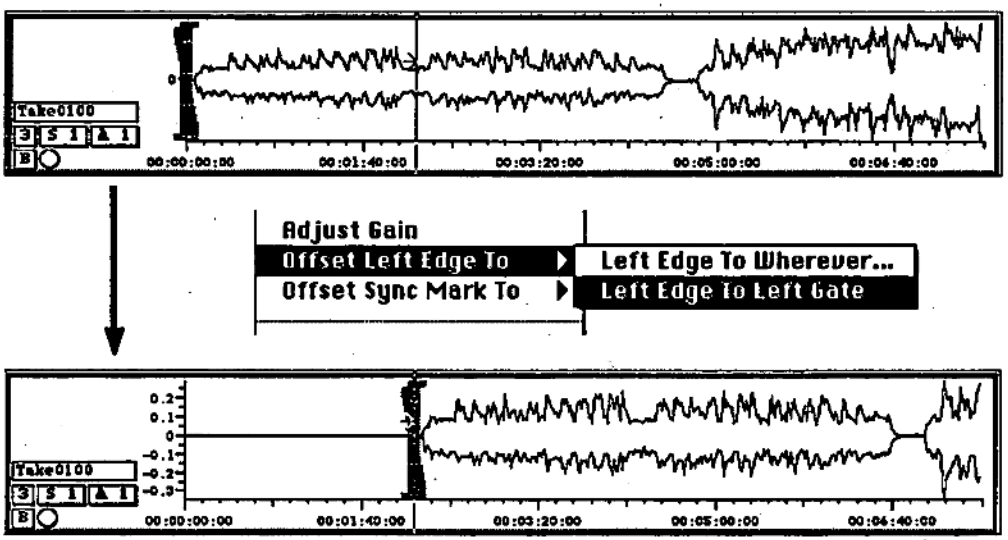


FIG. 10-15: If issued while no Segments are selected, the command Offset Left Edge to Left Gate affects the entire panel.

NOTE: The **Offset** commands work only if the topmost panel of the Edit or Sync Group is selected. If the commands are issued while another panel is selected, there is no effect

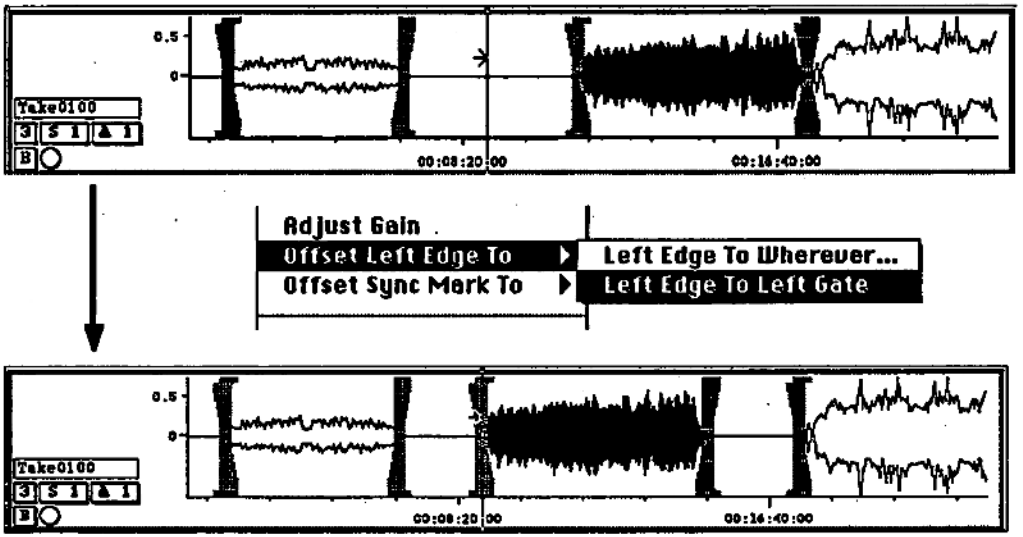
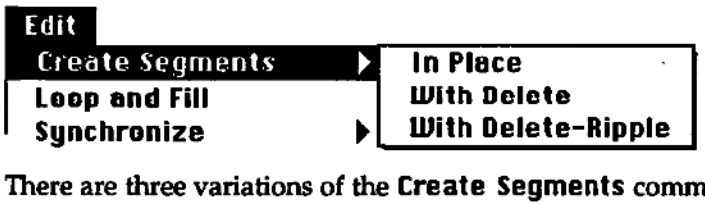


FIG. 10-16: When a Segment is selected, the Offset left Edge command applies to the selected Segment or Segments only.

The **Move Left Gate** commands in the **Move** menu can be used to position the Left Gate to the point to which a track is to be slid.

Creating new Segments with Editing Marks

Segment Start and Segment End markers may be placed as desired during recording or playback, or at rest. The Segment Start and End marks remain just that, marks, until the command **Create Segments** or one of its other variants is executed. At that point, crossfades appear at the Marks, defining the new Segment or Segments.



There are three variations of the **Create Segments** command. These commands place a fade at each Segment Start and Segment End mark, and select the sections that lie between Segment marks.

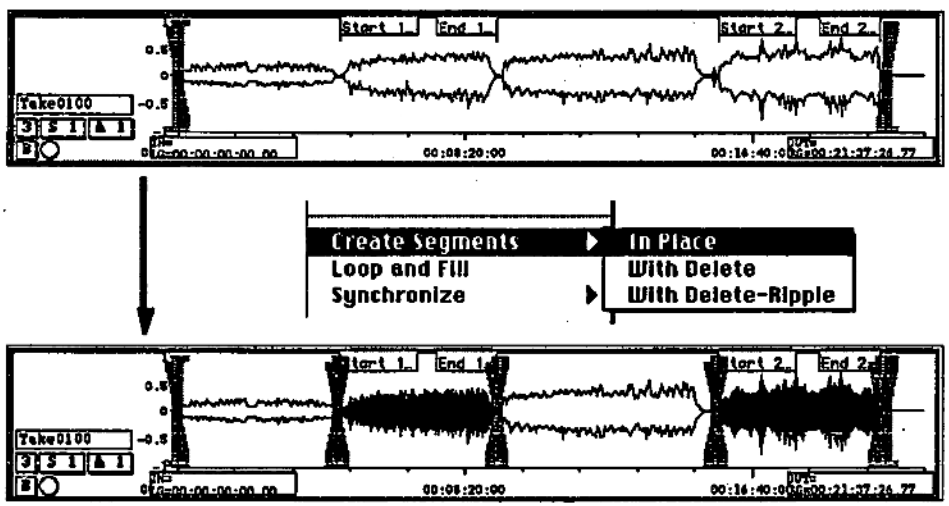


FIG. 10-17: Segment Start and End marks can be placed anywhere in a panel. The command Create Segments in Place puts a crossfade at each mark and selects the Segments defined by those fades.

Create Segments In Place leaves all audio exactly in position, and simply adds the appropriate fades at the Segment Start and Segment End Marks.

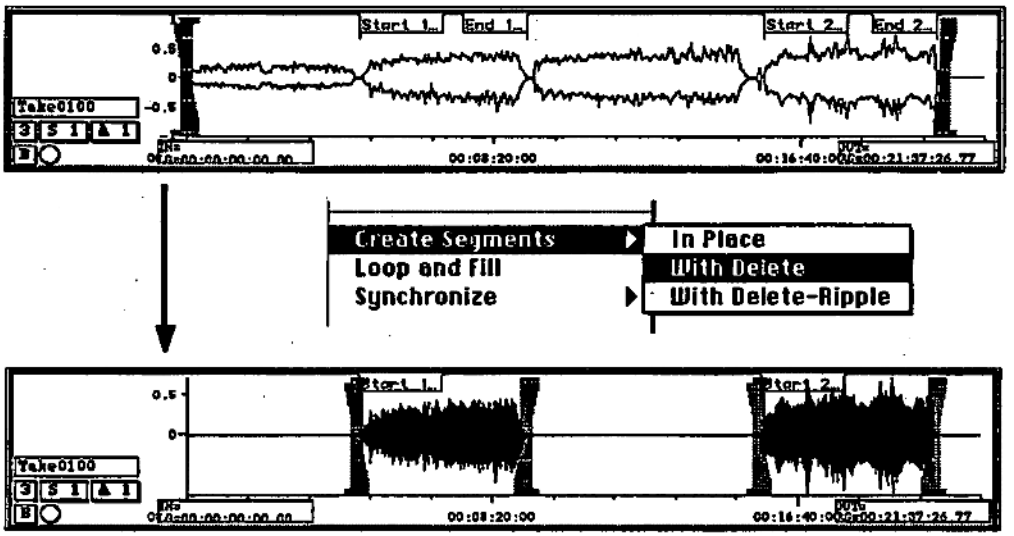


FIG. 10-18: Create Segment With Delete removes all material that does not lie between a Segment Start and a Segment End mark.

Create Segments With Delete places the fades and then deletes the audio between the designated Segments

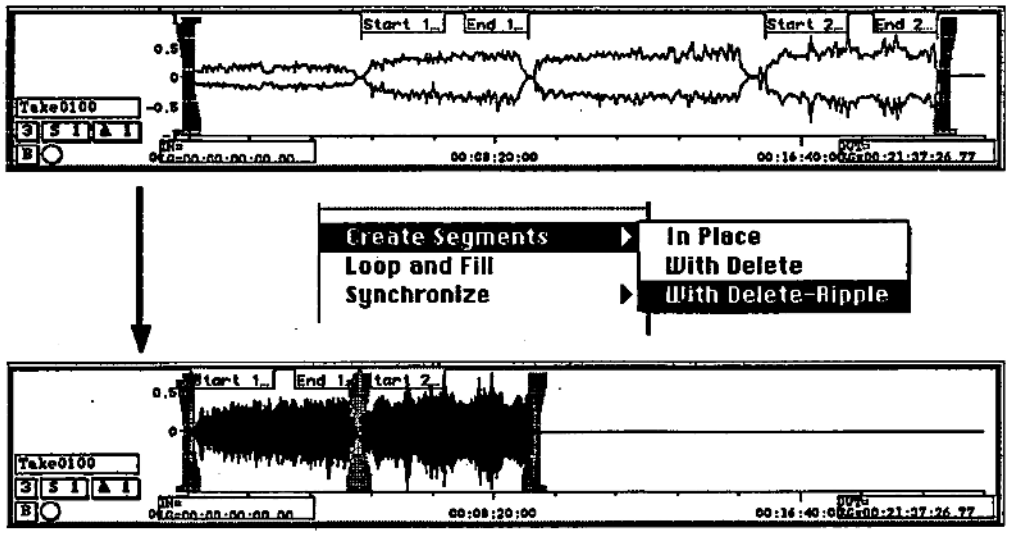


FIG. 10-19: Create Segments with Delete-Ripple removes all material between Segments and moves the created Segments to close the gaps.

Create Segments With Delete-Ripple places fades at the Segment Mark positions, then deletes intervening audio and slides the defined Segments together.

Creating Loops

In many instances it is useful to be able to repeat a section of audio automatically. The **Loop and Fill** commands provides a simple way to create audio "loops" for any purpose.

Edit

Loop and Fill

Loop and Fill is a special type of **Insert** command. It copies a section of audio between the In and Out points, or the selected Segment(s) on the Source panels. The copied section is repeated for as many time as needed to fill the space between the In and Out points.

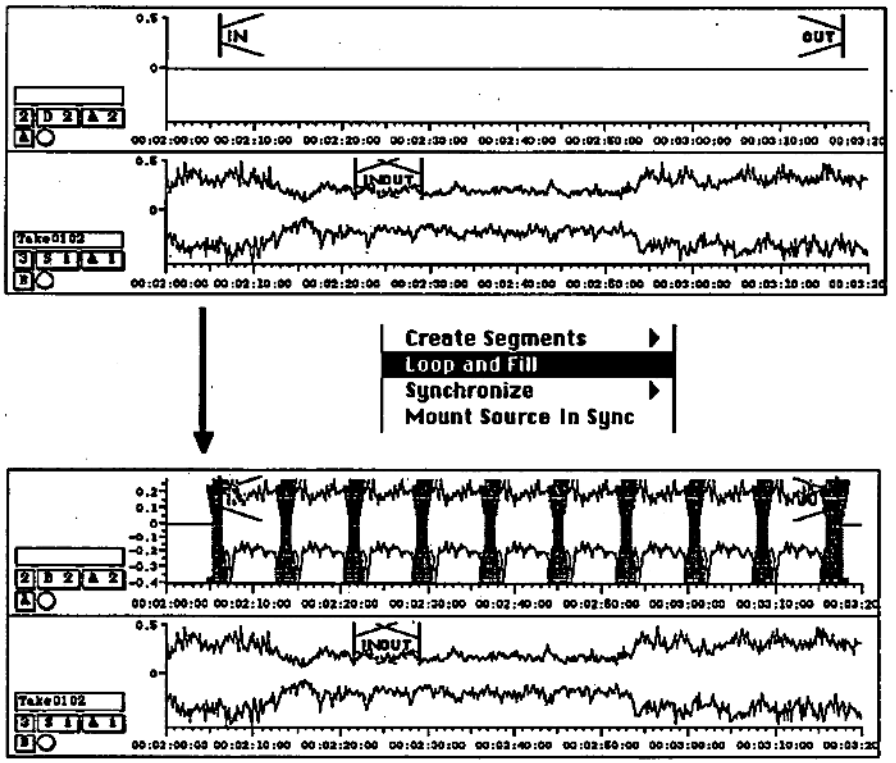


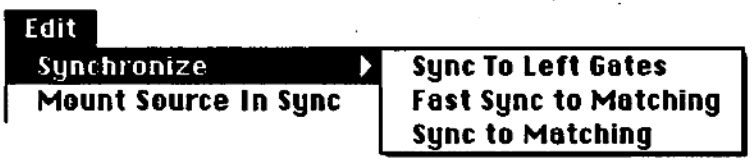
FIG. 10-20: The Loop and Fill command fills the space between the Edit Points in the Destination panel(s) with multiple copies of the material between the Edit Points on the Source panel(s).

If there is no Out point on the Destination panels, **Loop and Fill** will create 10 repetitions of the Source Loop. The fades between loops can be altered after the fact, using the Edit Fade window, or the default fades can be edited before the loop is created, so that the same fade is automatically used for each splice.

Loop and Fill is particularly useful for capturing ambience and room tone and using it to fill space in dialog or other material.

Synchronizing the Source and Destination Panels

In some case, it may be desirable to slide tracks so that material in two different sets of tracks line up in a certain way. The **Synchronize** commands move either the Source or Destination tracks so that audio lines up as desired.



This selection consists of three pull–right choices. These functions allow you to align or slip a track in time so its start matches some reference material.

Sync to Left Gate can be used to match disparate points in the two sets of panels.

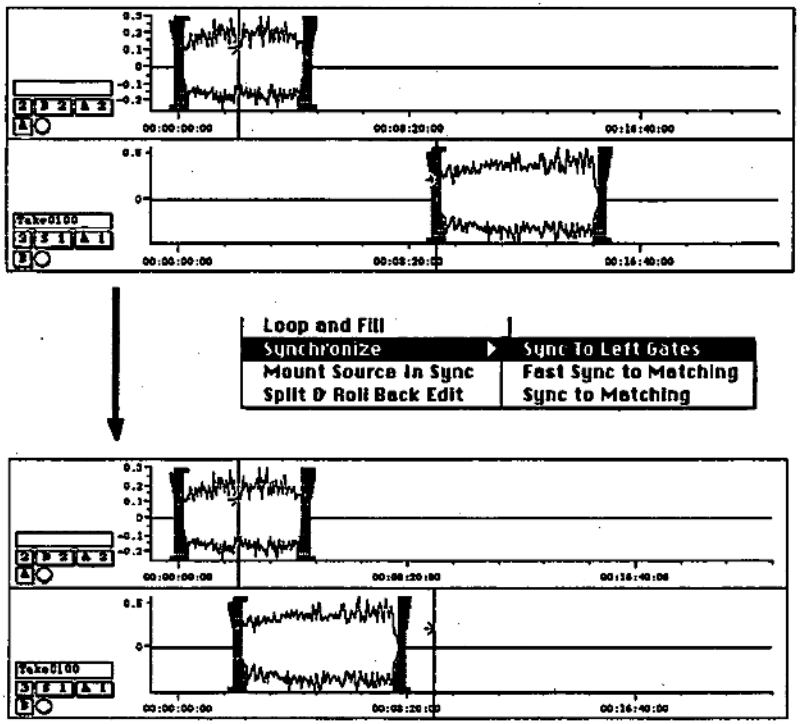


FIG. 10-21: The Synchronize commands move the audio in the Source panels. Sync to Left Gates slides the audio so that the Left Gates in both panels would coincide.

Notice that the Left Gate in the Source panel does not move along with the audio.

User preference determines whether the Source panel(s) or the Destination panels move when a **Sync** command is executed. The **Editing** section of the **EDL Preferences** contains a check box labeled "**Move Source When Syncing.**" If this box is checked (the initial default) the Source panels will move. If it is unchecked, then the Destination panels will move instead.

The **Sync to Matching** commands also offset one set of tracks against another, but instead of using the Left Gate of the source, the actual sound near the Left Gate is correlated or compared at the sample level with the sound near the Left Gate of the destination.

For these commands to operate, the Left Gate in the uppermost panel of each group must be placed within a fraction of a second of audio points that are well correlated with one another. (The Matching function works best with identical material. In that case, it can be very useful in aligning tracks.)

Fast Sync To Matching uses the first 2048 samples (about 50 milliseconds, and a little less than two video frames) immediately after the left Gate to correlate the two sets of sounds.

The "window" for **Sync to Matching** is larger, 8192 samples (about 1/5 of a second, or 6 video frames). The command is correspondingly slower in executing the correlation.

Extending a Segment

In some cases it may be necessary to extend a Segment by "grabbing" more of the original source Sound File.

Edit

Mount Source In Sync

This command looks at a Segment in the uppermost Destination panel that is enclosed by the Left and Right Gates. The SonicStation then loads the Sound File from which that Segment derives in the Source panels so that the designated Segment is aligned with its corresponding location in the original Source File.

"Splitting" an Edit

The **Split & Roll Back** command is unique in the SonicStation in that it moves audio from the Destination panels back into the Source panels. It can be used in multitrack editing to divide one track (or group of tracks) into two or more.

Edit

Split & Roll Back Edit

To split an edit:

- **Place an In Point just to the right of the edit you wish to split.**
- **Select the Split and Fill command under the Edit menu.**

Everything in the Schedule to the right of the split edit moves down into the lower two panels. The segment to the left of the split edit is now the last segment in the upper panels and fully extends beyond the edit. The segment to the right of the split edit is now the first segment in the lower panels and it fully extends to the left.

The crossfade of the split edit is stored temporarily in the default **In** Crossfade, and In points are placed in the Source and Destination panels so that an **Insert** Edit will exactly recreate the original Schedule. You can shift the In points to extend or shorten the segments before issuing the command.

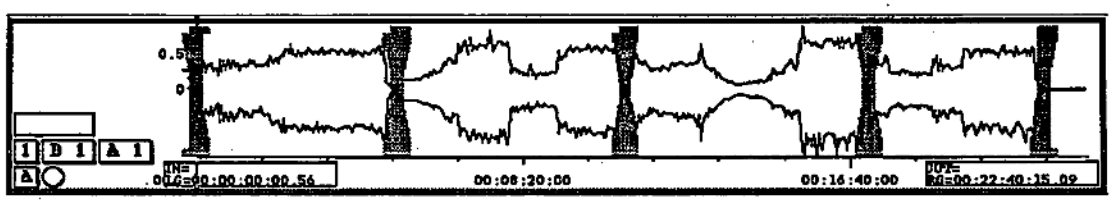
III. Editing with the Text Display

Whether edits are produced by **Insert** and **Delete** commands or by defining and moving Segments, the resulting Edit List can be described in a textual, as well as a waveform, format.

To switch any selected panel from Waveform to TextList format and back:

- **Use the key combination ⌘-T to switch a panel from Waveform to Text format.**
- **To switch from Text back to Waveform, use ⌘-Y.**

Any panel of an Edit List can be switched from Waveform display to Text [⌘-T] and back freely.



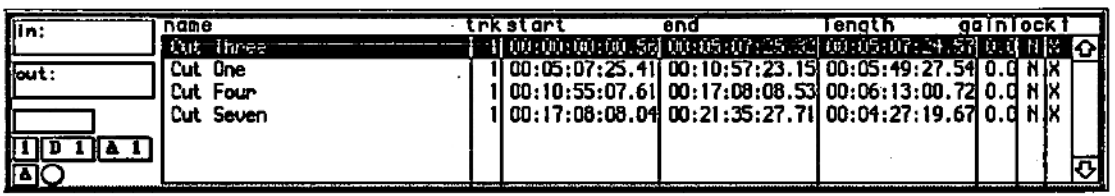


FIG. 10-22: Any panel of the Edit List can be displayed in graphic or text form.

Each audio segment is represented by one line of the text display, with eight columns that describe the Segment.

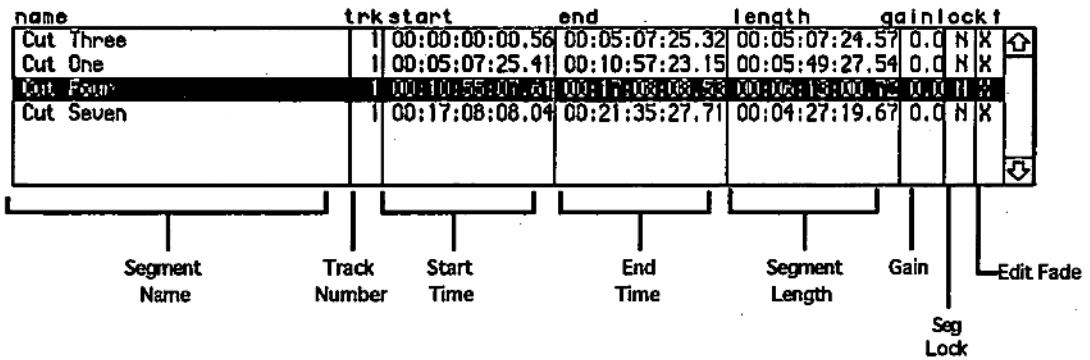


FIG. 10-23: Each Segment is represented by a horizontal line divided into eight columns.

All of the fields may be changed by the user, except "Segment Length" which is calculated based on the In and Out points.

Naming Segments

Initially, each Segment is given the name of the Sound File from which it is taken. The user has the option of renaming Segments to describe their contents.

To change the name of a Segment:

- **Click the line that represents the Segment of interest.**
- **Double-click the Segment Name field.**

This brings up a dialog to change the value.

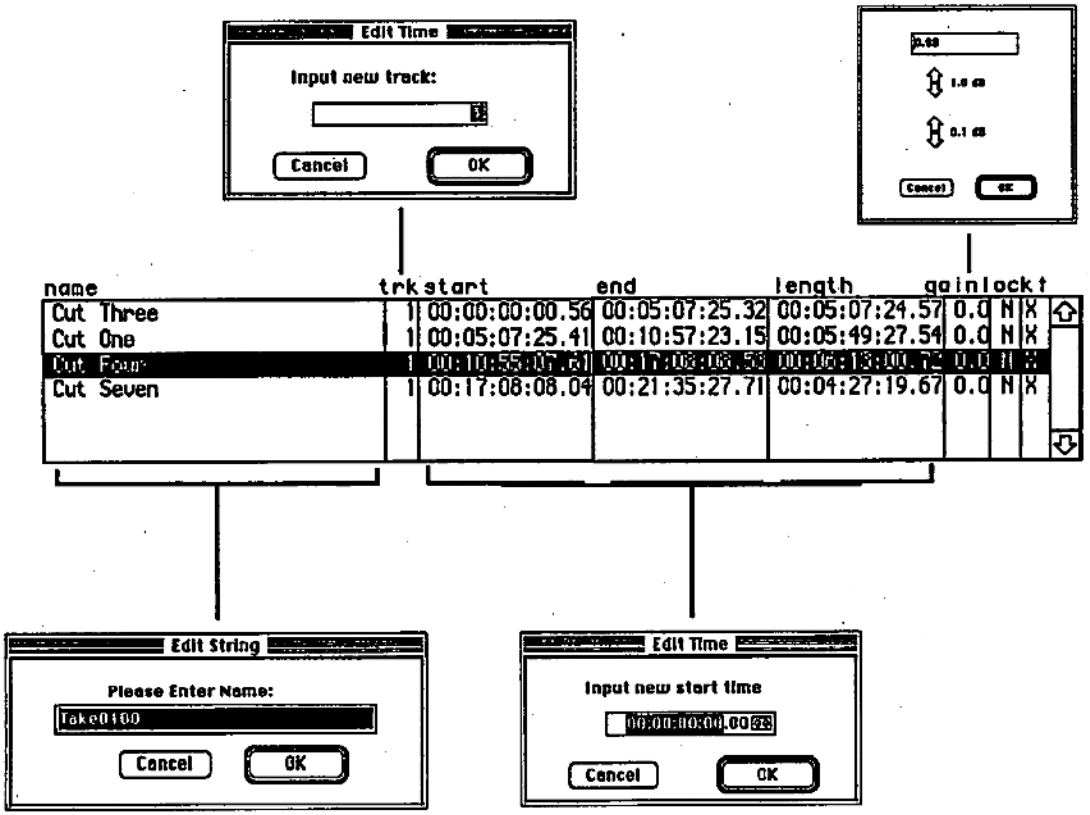


FIG. 10-24: Edit parameters are changed in the Text display by double-clicking the parameter field in the display. A dialog box accepts a new value for the designated parameter.

Other fields of the Text display work in similar fashion.

Moving Segments

Segments may be moved from one track to another, or they can be moved within the same panel, simply by editing the parameters in the TextList display.

Track Number

All Segments in a panel have the same Panel Number, by definition. A Segment may be moved (cut) from one panel to another simply by changing the Panel Number.

To move a Segment from one Panel to another:

- **Option-click the line that represents the Segment of interest.**
- **Option- double-click the Panel Number column to change its value.**

This brings up a dialog to change the value.

An error is generated if moving the segment to that location would cause simultaneous overlap of three Segments.

> NOTE: Unlike most of the Text and Waveform editing commands, changing the Panel Number affect only the selected Segment and not other panels of the same Edit or Sync Group..

Start Time

In the TextList display, Segments may be moved within the same panel by simply changing the value of the Start Time parameter. The length of a Segment may be changed as well, by *locking* the Segment and changing either the Start or End Time.

As with other columns of the Text display, the Start Time of a Segment is edited by double-clicking to call up a parameter-entry dialog. In this case, the dialog shows a time value, rather than text or straight numeric entry.

The effect of changing the Start Time depends on whether the Segment is "locked" or not. (The status of each Segment is set from the column at the right-hand side of the Test display.

If the Segment is not locked (the default condition), then changing the Start Time moves the Segment as a whole, just as when dragging the Segment in the Waveform display.

If the Segment is locked, then the end of the Segment remains in its original position, and changing the Start Time changes the length of the Segment. In this way, a Segment can be made smaller or larger, up to the length of the original file.

To change the Start Time of a Segment:

- **Click the line that represents the Segment of interest.**
- **Option-double-click the "Start" column.**

This brings up a dialog to enter a new time. The Start, End, and Length times use standard SonicStation time value entry formats. The display format is taken from the **EDL Preferences**.

Times may be entered individually, or they may be copied from other time fields in the system.

End Time

The End Time for a Segment behaves in the same manner as the Start Time. If the Segment is not "locked," then changing the End Time moves the entire segment. If the Segment is locked, then the Segment remains in place, but its length changes.

Segment Length

The Segment Length is not changed directly by the user. it is calculated from the Start and End Times. The length can be changed by "locking" the segment and altering either the Start or the End Time.

Setting the Gain of a Segment

Double-clicking the Gain field brings up the Gain Adjust dialog, exactly as when the Gain Adjust command is used in the Waveform display.

To Set the Gain that applies to a Segment

- **Option-double-click the Gain parameter field of the Segment of interest.**
- **Set the gain desired in the Gain Adjust dialog and click OK.**

Locking Segments

Double-clicking toggles the state of the "lock" on the Segment. When the Segment is unlocked ("N"), then changing the Start or End Time moves the Segment as a whole while keeping its length the same. If the Segment is locked, changing either time alters the total length of the Segment.

Editing Segment Fades from the TextList

Double-clicking the "fade" column opens the Edit Fade window, described in detail in Chapter 9.

To open the Edit Fade window from the Text display:

- **Select the "Start" or "End" time, and then choose Edit Gated Fade from the Edit menu. Edit Fade will open on the Fade In or the Fade Out of the selected Segment.**

OR **Optio-double-click the mark in the last column of the Text display. This brings up the Fade Out of the selected Segment.**

OR **Select two adjacent Segments by Option-Shift-cdrag, then Option-double-click the crossfade field of the first Segment of the pair. This brings up the crossfade between the two Segments.**

Overlapping Segments

If a Segment overlaps another Segment, both Segments play normally, but the system will give an error and refuse to perform an edit that results in three or more Segments sounding at the same time on a single panel. In this case, the "track" parameter of the list is useful, because the offending segment can be simply moved to another track.

Mixing Display Formats

Different panels of the same Edit Group may be displayed simultaneously in different formats. Edits made in one panel are immediately reflected in other panels of the same Group, whether these are in the same display format or not.

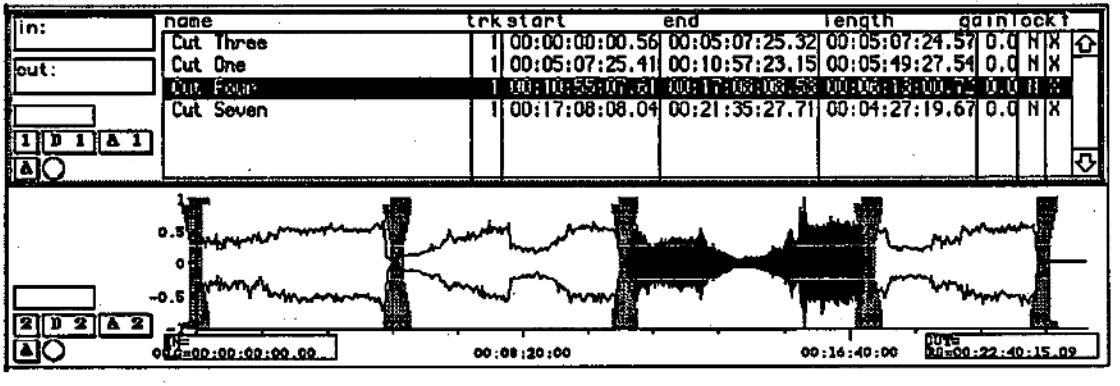


FIG. 10-25: Different members of the same Edit Group can be displayed in different formats. Changes in one panel are immediately reflected in the other.

Displaying parallel panels in differing formats can be extremely useful. However there are some hazards. **Zoom** and **Move** commands in a Waveform panel have no corollaries in the Text display. If the Text display is subsequently switched back to Waveform, then the two panels will be out of synch with each other.

Summary

On the SonicStation, sounds may be divided up into individual Segments, which are then moved and altered independently of one another. Segments may be dragged, or cut and pasted using standard Macintosh operations.

A number of the editing commands can be used with either Segments or In/Out points, such as the commands to create loops or offset (slide) tracks.

Audio can be displayed and edited in Text format, in which case it is inherently viewed as Segments. Nearly all of the same editing operations that are performed in the Waveform display format alternatively can be performed in the Text display.

Chapter 11

Multitrack Editing

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Introduction

On the SonicStation there is no inherent difference between editing mono, stereo or multitrack material. As many tracks as desired may be grouped, and all of the editing instructions and operations covered in Chapters 9 and 10 may be used in a multitrack environment.

The major difference between editing in stereo and editing in multitrack for music production or soundtrack editing is in the way that panels are grouped and selected.

In stereo editing, the number of tracks in an edit is fixed, and the number of panels on the display is usually fixed as well. Generally, the same panels are kept assigned to Destination and to Source.

In multitrack editing, a larger number of panels are placed onscreen, and many more panels can exist off screen. Panels are assigned and reassigned to Source and Destination Edit Groups as sound is moved from one panel to another. The number of panels that are cut in a single edit operation varies as well.

The multitrack operator must also be aware of the assignments of panels to the channel inputs of the Mixing Desk. If too many active channels are routed to a single input, some channels will not play.

I. Creating a Multitrack Edit Display

The EDL **Preferences** determine how many panels are created in a new Edit List. The SonicStation can work with up to 64 panels in an Edit List, but creating more tracks than are needed is not recommended, initially. Once the Edit List has been created, additional tracks can be added simply by opening Sound Files. The size of the display determines how many panels can be viewed at once, but tracks that are not visible can be moved in and out of the onscreen panels by changing the Track number in a panel's left-hand area.

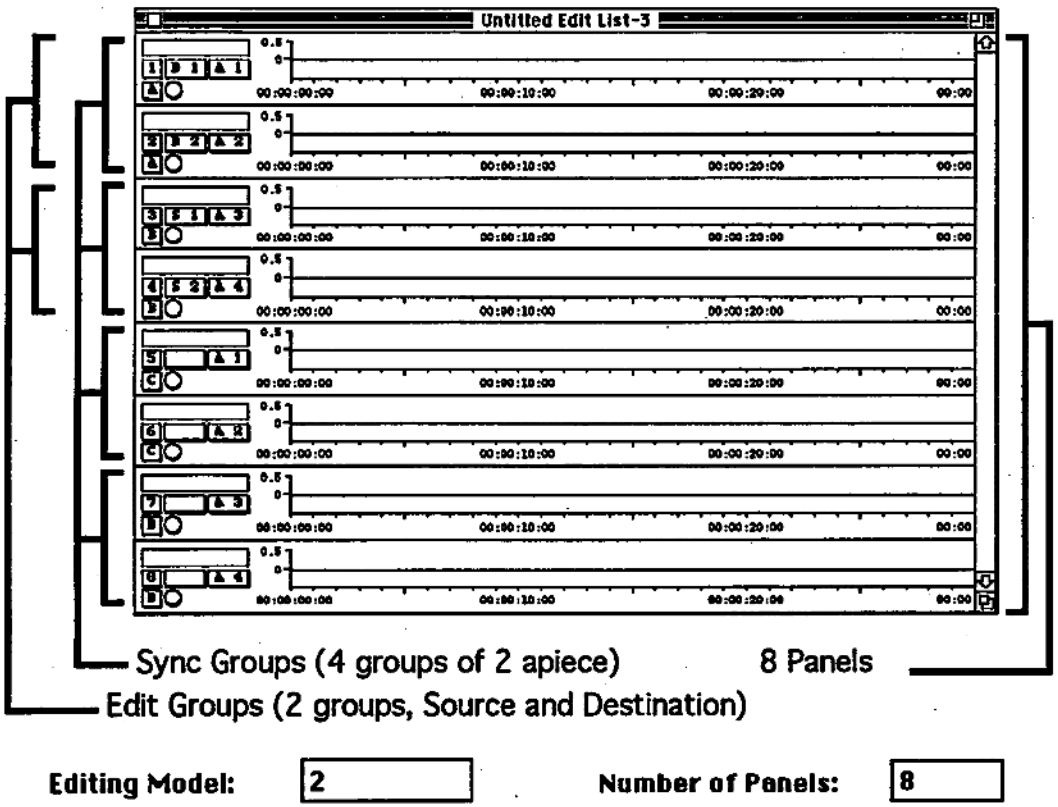

FIG. 11-1: The Editing Model and Number of Panels from EDL Preferences govern how new Edit Lists are set up.

When an Edit List is created, the system assigns tracks to Sync Groups (A-P) and Edit Groups (Source and Destination). The Editing Model, also set in the **EDL Preferences**, determines how many tracks are assigned to each Group.

The setting of the Editing Model influences the type of editing. If the Model is set to "1," then each track in the Edit List is assigned to a separate Sync Group. This is perfect for assembling dialog and sound effects that are individually recorded in mono.

If the Editing Model is set to "2," each Sync Group (and Edit Group, by extension) will consist of a pair of tracks, which sets it up for stereo editing. Likewise, when cutting larger groups of tracks at the same time, the Editing Model can be set to a higher number.

The Editing Model sets the initial state of the Edit List, but the user can change the assignments of the tracks at will.

Note that the Editing Model *does not* govern how many tracks are loaded with a Sound File. A Sound File is recorded either mono or stereo. When the file is opened, the system will *always* open all channels in the file.

Adding Tracks to an Edit List

When a Sound File is opened, the system automatically creates a number of new tracks equal to the setting of the Editing Model. In this fashion, the Edit List can grow as it is used, and the editor never runs out of tracks.

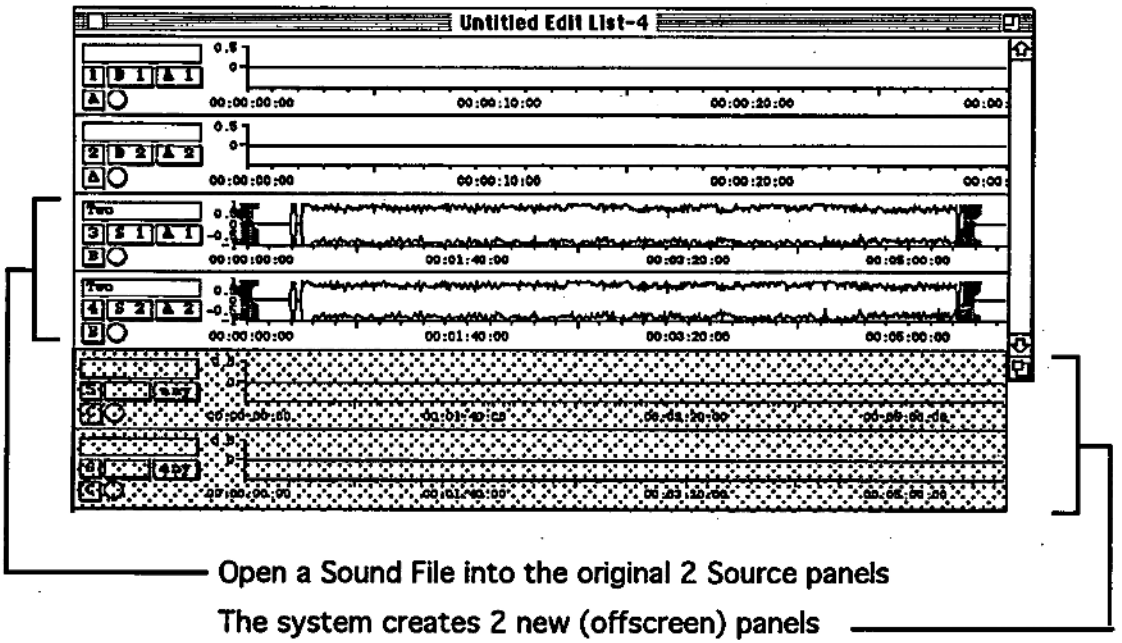

FIG. 11-2: When a Sound File is opened into the Source panels, the system automatically creates a set of new tracks.

to change the number of panels shown on the display, change the **Number of Panels** in the **EDL Preferences**. However, the new panels do not appear until the Edit List is saved, closed, and reopened.

Viewing Multiple Tracks

Many more tracks can be generated than can be seen on the screen at one time (even with a *very* large screen). Different tracks can be moved into the display view by changing the track number in the box in the lower left area of each panel.

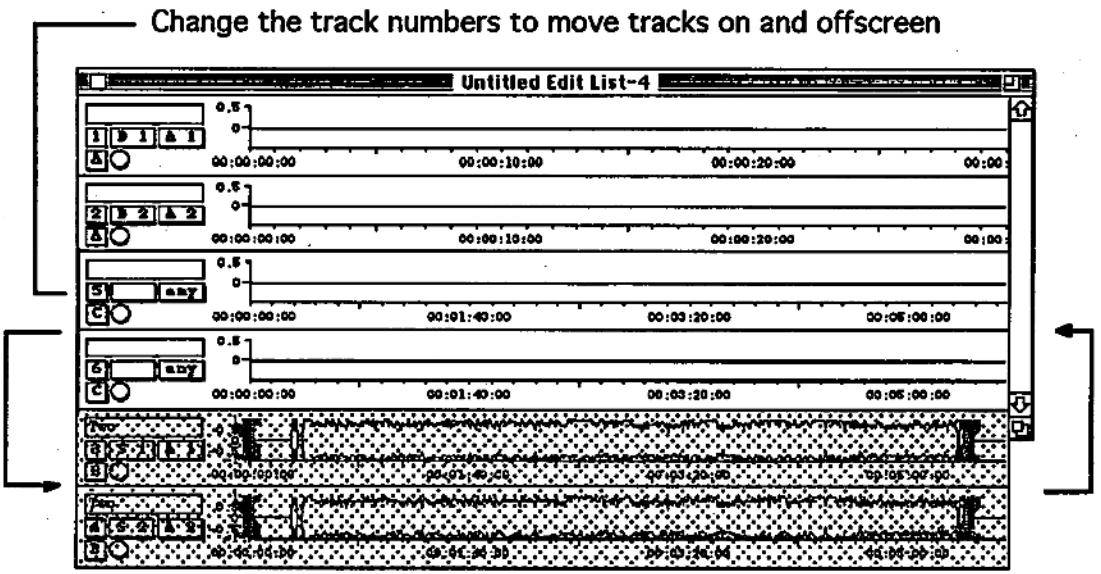

FIG. 11-3: Panels can be moved on and off-screen by selecting different track numbers.

> CAUTION! As tracks are moved, the SonicStation shuffles panels so that no duplicate panels are created. it is easy to get confused about which panel should be where on the screen. To avoid confusion, we recommend you only move tracks in and out of the lower panels in the edit display. Always change the *topmost* panel of the Sync Group you are viewing.

Assigning Tracks to the Mixing Desk

When a Play command is issued, the Edit List plays selected panels and panels in the same Sync Group. Individual panels are routed to the input channels of the Mixing Desk according to the setting of the Audition Channel box in the Waveform panel. The choices for assignment are A1 through A4, for a maximum playback of eight channels.

Any number of panels can be routed to an Audition Channel, but only two channels with active audio can be played into a mixer channel at any one time. If edits and channel assignments demand more channels than the four Audition Channels can handle, the last-entering channel is simply not heard. (Note: An Expansion Memory SS-601 can be added to increase the channel capability from 2x4 channels to 3x4, or 12, channels.)

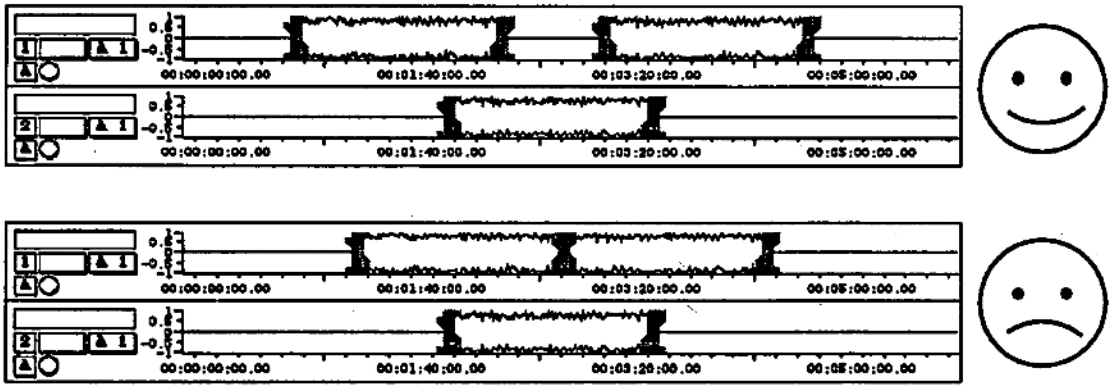

FIG. 11-4: When panels are assigned to the same Audition Channels, care must be taken that there are never more than two simultaneously playing elements per Audition Channel.

Channel assignment problems can result from overlapping too many Segments, but they can also occur as a result of crossfades. In the example above, the edit in the upper panel will play correctly, because there are never more then two audio channels playing at one time. The lower example will fail during playback because the two abutting Segments in the upper panel have a crossfade between them. During the period of the crossfade, that panel plays two channels. The single Segment in the lower panel makes three channels, which exceeds the disk transfer bandwidth.

II. Grouping Panels and Tracks

In multitrack work, the operator is likely to change the assignments and groupings of channels more actively than when editing in stereo.

Selecting Panels

To select a panel:

- **Click the desired panel.**

OR **Use the QuicKeys shortcut for a 4-panel Edit List; Page-up, Page-down, and Shift-Page up/Page down.**

To select multiple panels:

- **Hold down the Shift key while clicking each of the desired panels in turn. This selects the cliked panels, as well as all panels in between**

OR **Hold down the ⌘ key while clicking. This selects individual discontiguous panels.**

De-Selecting Panels

To de-select a previously selected panel:

- **Hold down the Shift key while clicking the panel you wish to de-select.**

To de-select an entire group of panels:

- **De-select one panel as described above.**
- **Release the Shift key and click the same panel again.**

This re-selects that panel *only* , causing all of the previously selected panels to become de-selected.

Assigning Tracks to Edit Groups

Most editing operations, such as Segment select, Cut, Paste, etc. use the Edit Group to determine which channels will be affected.

To assign one or more panels to an Edit Group:

- **Select all panels to be grouped.**
- **Hold down the Shift key and hit either "S" (for Source), or "D" (for Destination.**

All selected panels change to the new Edit Group.

Assigning Panels to Different Sync Groups

Sync Groups are used to determine which panels will play when a play command is issued.

To set a group of panels to the same Sync Group:

- **Select all panels to be grouped.**
- **Change the Sync Group designation in any one of the selected panels.**

All selected panels change together to the new Sync Group.

Summary

The techniques of editing in a multitrack environment are the same as those used for stereo or mono. All editing commands operate the same.

The major difference between editing for multitrack and editing for stereo is that the user must be more conscious of the ways that tracks are grouped, and is likely to change those groupings more often.

Chapter 12

Time Code and Synchronization

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Introduction

The SonicStation is equipped to read and write SMPTE and EBU time code in all recognized formats and rates. Incoming time code may be used to "time stamp" a Sound File at the time of recording as described in Chapter 5, or to trigger playback.

The time code generator can output time code which is free-running or in synch with playback. It also can regenerate incoming code.

The SonicStation's rate of audio playback is driven entirely by its sample clock, generated internally or externally. The time code reader can trigger an Edit List to begin playback at an exact predetermined instant, after which playback proceeds at the rate of the sample clock.

In many cases the sample clock is accurate enough to use triggered playback for synchronization, especially if the length of material is a few minutes or less. For true synchronization, however, it is necessary to lock the sample clock to the rate of an external reference, such as video synch or a stable time code generator. A referenced sample clock is mandatory if audio is to be transferred digitally to D-2 or other digital video formats.

The Sonic Solutions SS-602 **Universal Clock Module** can generate a sample clock that is locked to an external reference. If a digital audio signal already referenced to the appropriate source is available, it may be used to provide the SonicStation's sample clock instead.

I. Reading Time Code

To read time code, the SonicStation must be connected to a valid time code source using the special cable included with the system. The reader must also be enabled from the **Time Code Read/Write Preferences** dialog.

Setting up the Reader

Hardware Connections

To use the time code features of the SonicStation, it is necessary to use the special cable that is included with the SonicStation package. The time code connections are electronically balanced, with XLR pin 2 as "hot." Pin 2 is the low side of the signal, and pin 1 is tied to ground.

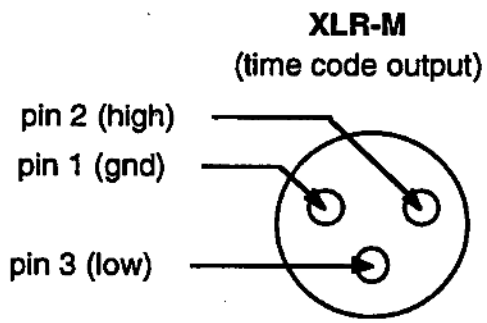

FIG. 12-1: The SMPTE connector cable is terminated in male and female XLR cables, with pin 3 as the high side of the signal.

If the system is to be connected with equipment that uses other types of connectors for time code, suitable adapters must be used. For single-ended connections, pin 2 (low) should be tied together with pin 1 (gnd).

Time Values and Time Display Formats

The SonicStation supports reading and writing of time code at all rates and of all varieties, and time values may be displayed in various forms including all time code formats, feet and frames for film, raw seconds, or audio samples.

The formats of times displayed and used in the system are set in the following places:

- In EDL **Preferences**, which controls time display in an Edit List
- In **Run-Time Configuration**, which determines time display in other dialog and windows in the system (e.g., in the Project Manager)
- In the **Time Code Read/Write Preferences** dialog, which specifies the format that the time code generator will output
- In the Transport Panel's Clocking and Time Display section (See Chapter 5, Recording.)

This system provides flexibility and the capability of dealing with different forms of time in different portions of the system. However, situations may arise in which the system selects a format that is not correct for the situation at hand, or where the user is expecting one format but the system is using another. This can result in incorrect location and other problems that are not always easy to resolve.

Future software updates will centralize these parameters to a greater degree, doing away with most or all of these conflicts. Meanwhile we recommend that users avoid these problems by setting all display format parameters to the same value.

> IMPORTANT! Set all parameters for time display format in the **Run-Time Configuration**, **Time Code Read/Write Configuration**, and **Edit List Preferences** dialogs to agree with each other and with the format of incoming time code.

This ensures that there are no possible conflicts in using the displayed time values from one part of the system to another.

Time Code Preferences

Time code reader and generator functions are controlled by a single preferences dialog. Select **Time Code Read/Write Prefs....** from the **Preferences** command in the **File** menu to open the **Time Code Reader/Generator Preferences** dialog.

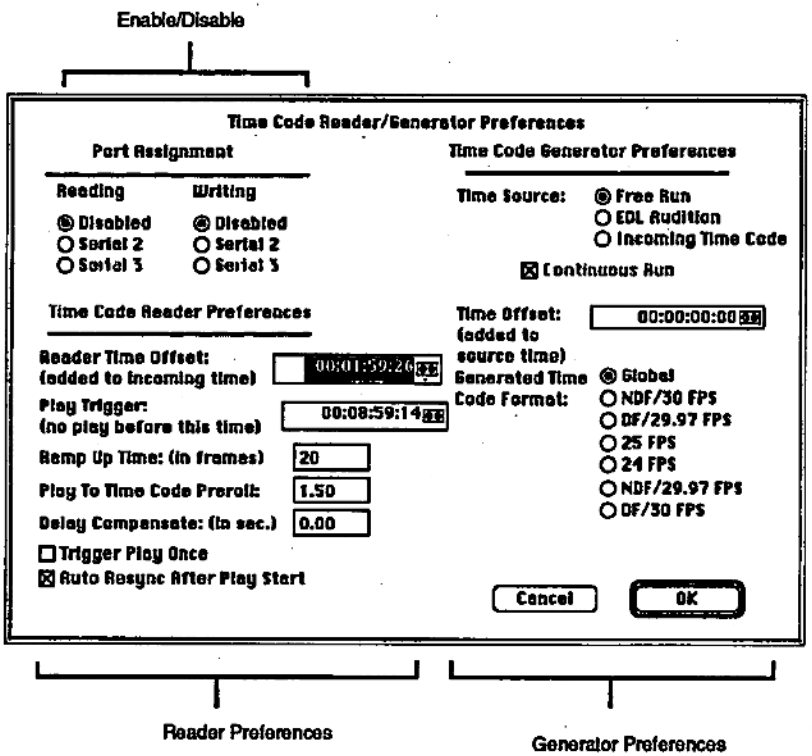

FIG. 12-2: The Time Code Reader/Generator Preferences dialog controls all time code functions in the SonicStation.

There are three sections to **Time Code Preferences**: **Port Assignments** (Enable and Disable) for both reader and generator, **Reader Preferences**, and **Generator Preferences**.

Port Assignment

Reading	Writing
◉ Disabled	◉ Disabled
○ Serial 2	○ Serial 2
○ Serial 3	○ Serial 3

FIG. 12-3: The Port Assignment section of the Time Code Preferences dialog turns the reader and generator on and off.

The SonicStation uses the serial ports on the SSP-3's Motorola 56001 DSP chips to read and generate time code. In earlier versions of the system, one of two different ports could be selected for time code use. Presently, the SSP-3 hardware can use only Port 2 for time code. Thus, the selections in this part of the dialog come down to enabling or disabling the Reader and the Generator.

The **Time Code Reader Preferences** apply only when triggering an Edit List to play to time code. These settings are discussed in detail later in this chapter.

Time Code Reader Preferences

Reader Time Offset: (added to incoming time)	00:01:59:26
Play Trigger: (no play before this time)	00:08:59:14
Ramp Up Time: (in frames)	20
Play To Time Code Preroll:	1.50
Delay Compensate: (in sec.)	0.00

☐ **Trigger Play Once**

☒ **Auto Resync After Play Start**

FIG. 12-4: The Time Code Reader Preferences affect play to time code only.

Note that **Reader Time Offset** and **Play Trigger** are time parameters that can be displayed in different formats. When using these parameters, be sure they are set to the same format as the incoming time code.

Reading Time Code Onscreen

There are two ways to view incoming time code. The **File** menu includes an item called **Status Monitors** that provides a way to read incoming and outgoing time code directly.

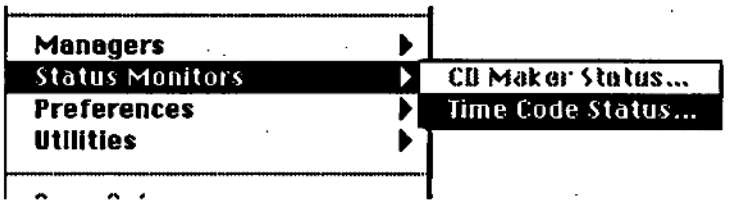

FIG. 12-5: The Time Code Status... selection of Status Monitors brings up a window to display time code input and output.

The **Time Code Status Monitor** window shows the output of the generator and code read by the reader simultaneously.

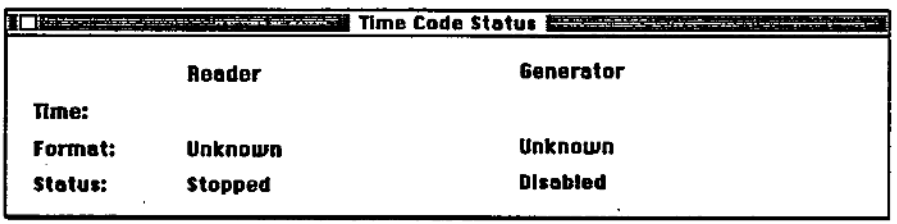

FIG. 12-6: The Time Code Status window displays time code continuously and may be used for convenient monitoring.

The status of the reader and generator are displayed along with the format of code being generated and read.

Incoming time code also can be read from the Transport Panel. When the system is set to play from time code, the current time code location is displayed in the Transport Panel's **Current Location** window.

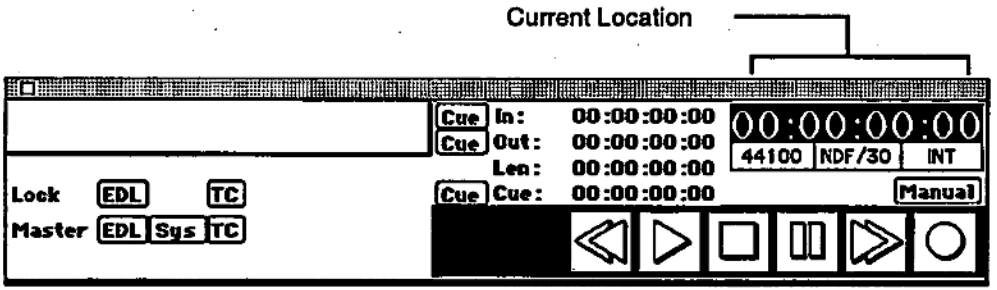

FIG. 12-7: The Transport Panel's Current Location display shows time code when playback is triggered.

The time display format, as shown in the control box underneath the Current Location window, automatically changes to indicate the format of the code being read.

Recording with Time Code (Time Stamping)

When transferring audio from a time-code referenced source such as a film or video soundtrack, a "time stamp" should be recorded along with audio. This is stored as an offset value. When the Sound File is subsequently opened using the command **Open Sound File with Offset...**, the source Sound File is placed in the Edit List at the exact time location that it had on the original tape.

To record a Sound File with time stamping:

- **Make sure that time code reading is enabled using Time Code Read/Write Preferences, and that valid time code is available.**
- **In the Record Sound File dialog window, click the check box next to the words Time Stamp Source. This brings up a dialog to select the source of time code.**
- **Select Time Code Reader as the source and click OK.**

The only active choices in this dialog are **Time Code Reader** and **None**. The Expanded SonicStation also can use time code provided over a serial link to an audio or video tape transport.

- **Start the recording normally.**

As the recording begins, the value of the Time Stamp appears in the **Record Sound File** window. This value is stored with the Sound File, and is used when the command **Open Sound File with Offset...** is used to open the file into an active Edit List.

Playing to Time Code

The Transport Panel's Control Select section is used to enable playback to time code.

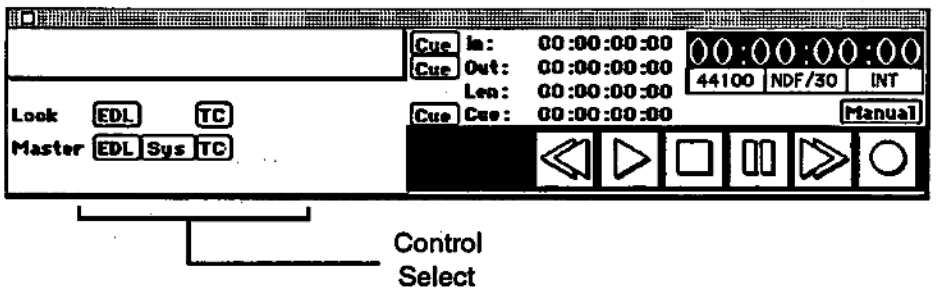

FIG. 12-8: The Transport Panel has a group of buttons that are used to select Master and Slave devices (functions).

When TC (time code) is chosen as Master, the selected Edit List will play in response to time code.

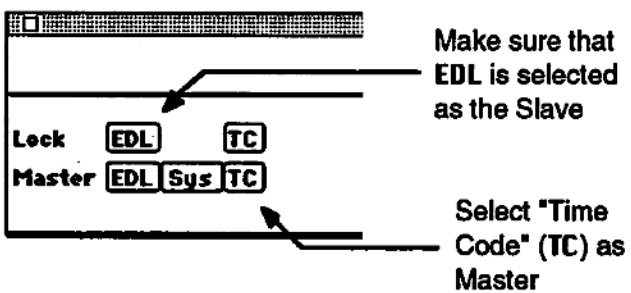

FIG. 12-9: To Trigger playback to time code, select TC (time code) as the Master, and EDL (Edit List) as the Slave (Lock)

When time code is played into the system, the current Edit List begins playing when its start time is reached.

Parameters for Time Code Triggering

As mentioned earlier, the **Time Code Reader** section of the **Time Code Read/Write** dialog affects triggering to incoming code.

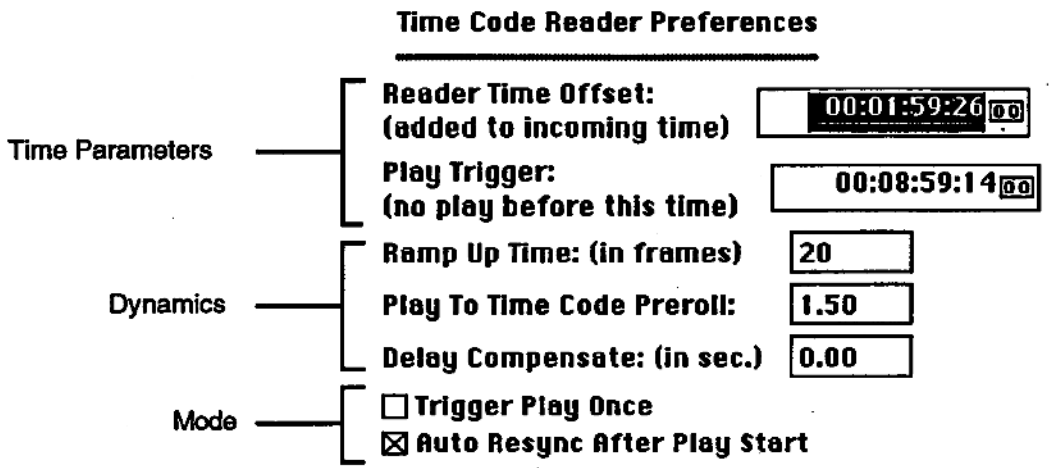

FIG. 12-10: The Time Code Reader Preferences control how the system responds to incoming time code.

Reader Time Offset is added to the value read by the time code reader. The resulting value is used to trigger playback of the Edit List.

Play Trigger sets a "boundary" time. No playback will occur while the current time code value is below this figure

Ramp-Up Time is expressed in frames. This is the number of continuous frames that the system must see in order to recognize time code as valid.

Play to Time Code Preroll provides a compensation for latency in the Sonic system's response to an audition command.

Delay Compensate is a value in seconds that is used to offset playback. This can be used to compensate for propagation delays through external D/A converters or other devices. A *negative* number must be entered to introduce a delay in playback.

Trigger Play Once causes the system to disable playback to time code after each triggering.

Auto Resynch After Play Start causes the system to "chase" time code wherever it goes. Normally this box is left checked so that the system will track if the time code source is fast-forwarded or rewound.

The Auto Resynch function can occasionally cause problems if the rate of time code does not closely match the sample clock. If playback drifts more than 4 frames from the current location of the play pointers, the system will jump to the time code location. If this occurs while audio is present, a "hiccup" or noise may be heard.

Using Time Code for Punch-In/Out

As described in Chapter 6, the Transport Panel may be used for automatic punch-in and punch-out.

To use time code for punching:

- Select **TC** as the Master in the Transport Panel.
- Set the record channels to "Ready" in **Record Preferences** as described in Chapter 6.
- Click the **Timed** button in the right-hand portion of the Transport Panel.
- Enter the desired times in the **In** and **Out** Cue fields by typing, nudging, or grabbing the time from the Transport Panel's Current Location display (select time field and press space bar).
- Start time code and the punch will execute automatically.

II. Generating Time Code

The SonicStation also can generate time code in all formats, either free-running or synchronized to playback of the Edit List.

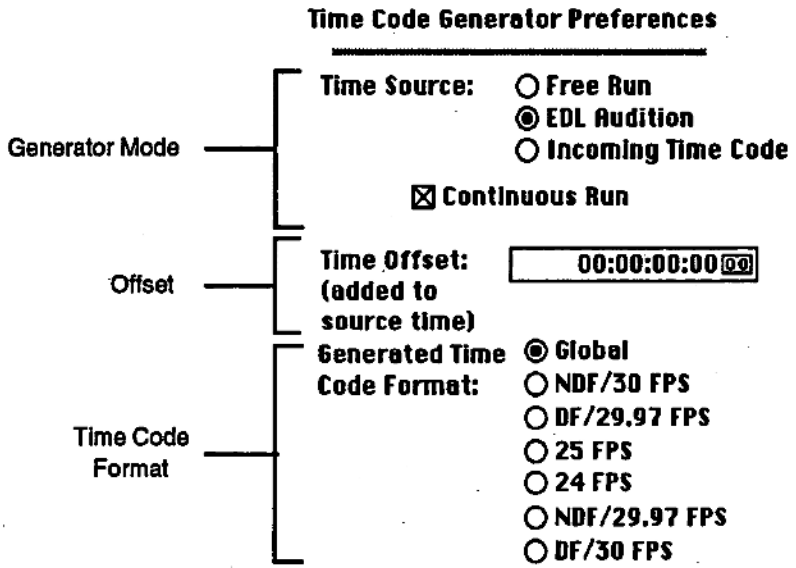

FIG. 12-11: The Time Code Generator Preferences include items for controlling the generator's mode, offset, and the format of code generated.

Generator Mode: Free-Run vs. Lock to Edit List

The time code generator has three different modes of operation:

- **Free Run.** Time code is generated continuously. The generator can be reset by disabling and re-enabling it in the **Port Assignment** area of the dialog.
- **EDL Audition.** When an Edit List plays back, time code is generated along with playback, following the current time exactly. This mode is useful when dumping the SonicStation's output for layback to video.
- **Incoming Time Code.** Time code coming into the SonicStation is regenerated and output (along with any offset selected).

Continuous Run applies to **EDL Audition** and **Incoming Time Code** modes only. (**Free Run** is always continuous.) If **Continuous Run** is selected, the time code output continues after Edit List playback or incoming time code ceases. Beginning a new playback or inputting new code resets the time code value but generation continues without interruption.

Time Offset is added to the value generated internally before it is output. For **Free Run**, this means that the starting point of time code is set to the value of the offset. For **EDL Audition** and **Incoming Time Code** modes, the offset modifies the values that would otherwise be output.

Generator Time Code Format

The SonicStation can generate time code in any of the standard formats. The selection of **Global** as the format causes the generator to follow the format selected for time display in the **Run Time Preferences** (discussed above), *provided* that the format selected is a form of time code. Choosing **Samples**, for example, as a display format causes the time code generator to default to NDF/30 FPS.

In **Incoming Time Code** mode, the selection of time code format is overridden, and time code is output in the same format as that of the incoming code.

III. Sample Clocks and Synchronization

When a synchronizer is used to lock an analog recorder to time code, it first "chases" the recorder at high speed until the current time code location is reached. It then drops into play/record and maintains synch from that point by speeding up or slowing down the transport slightly whenever it begins to drift from the time code reference.

Video transports, digital audio recorders, and the SonicStation work in a different fashion. Each transport in the system is fed a common reference frequency. (Video "black-burst" or "composite sync" is the common reference in video. Digital audio systems sometimes use "Word Clock.") This reference signal control the playback speed of each transport.

The first part of the synch process is the same. The "slave" transport is chased until its position exactly matches incoming time code. From that point, the synchronizer/controller releases control of the slave deck entirely. The slave transport remains in precise synchronization with the master because both are clocked by a common reference signal. They cannot get out of synch any more than two gears attached to the same shaft could.

If the Master and Slave transports are *not* tied to a common clock, the two will inevitably drift apart from one another. How quickly they get out of synch depends on the difference in rate between transports. Even with the tightest tolerances in frequency there is always some difference, which translates into drift.

The SonicStation Sample Clock

For the SonicStation, the timing reference is the sample clock. Usually, this clock is derived directly from the digital audio source feeding the SSP-3's input, as described in Chapter 1. If the system is placed into "self-clocking" mode (by disabling the input in the **Audio I/O Preferences** dialog), the SSP-3's internal oscillator takes over.

Most clock sources, and the SSP-3's onboard oscillators, are very stable and accurate. In many situations, adequate synch can be maintained simply by using the same clock throughout the process of recording, editing, and dumping audio back to a delivery medium. Even if different clocks are used at different points, chances are good that they will correspond closely enough that the drift will be minimal.

In situations requiring very precise synchronization, the SonicStation's sample clock must be tied to an external reference. This may be accomplished in one of two ways.

The Universal Clock Module

The SS-602 Universal Clock Module (UCM) is an optional unit that can derive a sample clock from video sync or time code. It is compatible with NTSC and PAL video, as well as film rates of time code.

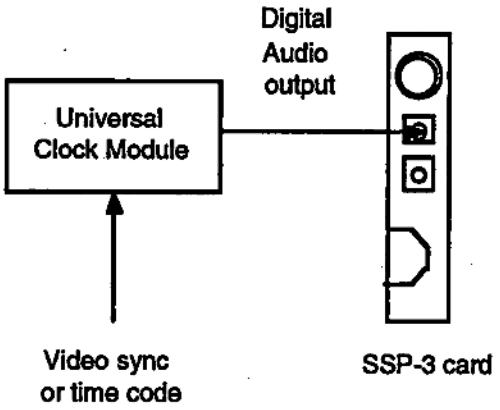

FIG. 12-12: The Universal Clock Module (UCM) provides a digital audio clock that is referenced to external video or time code.

The UCM may be connected to the SonicStation directly, in which case audio input is locked out while referencing to external clock.

The Universal Clock Module also can be used to provide a clock to the SS-612 A/D-D/A Converter, whose output in turn drives the SonicStation's sample clock. In this configuration, audio can be recorded in perfect synchronization with the reference signal.

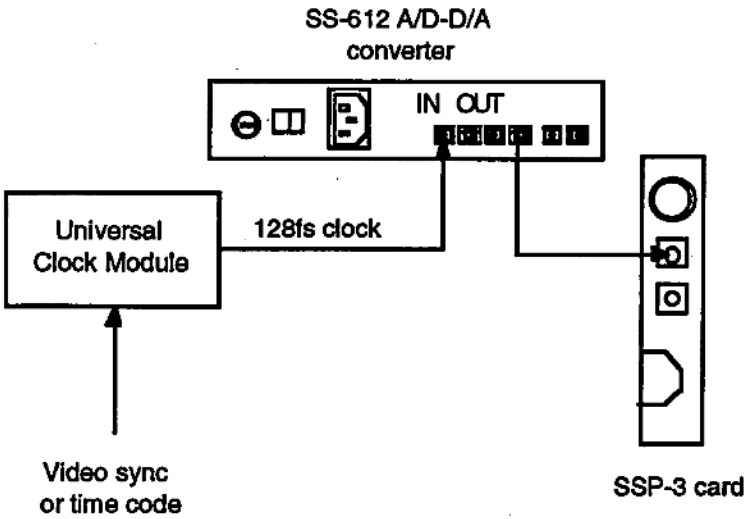

FIG. 12-13: The UCM can also provide a timing reference to the Sonic Solutions A/D-D/A converter, which in turn provides clock to the SonicStation.

Synchronous Audio

If the SonicStation is connected with a digital audio source that is already in synch with an external reference, the audio feed itself will clock the SonicStation. For example, when transferring from D-2 format digital video machines, the digital audio tracks are precisely phase-locked to video. Digital audio recorders that can be referenced to video, such as the Sony PCM-1630, also can be used to provide clock.

Another source of synchronous clock is A/D converters that can be referenced to video or other sync source, such as those manufactured by Apogee.

Summary

The SonicStation provides comprehensive facilities for use with time code. When using the system with other devices, the user should make sure that:

- All hardware connections for time code are established.
- The time code reader and generator are properly enabled.
- All the time format references in the SonicStation (**Run Time Preferences**, **Edit List Preferences**, and **Time Code Read/Write Preferences**) are set to the same rate and format, and that this matches incoming code.
- If precise synchronization is required, the SonicStation's sample clock must be referenced to external sync.

If these considerations are observed, the SonicStation will operate in perfect synch with external equipment.

Chapter 13

Archive and Restore

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Introduction

The SonicStation produces complete, fully edited audio as its output. Normally, this output is transferred to a medium such as DAT, Sony 1630, or recordable CD for delivery.

The results of work on the SonicStation may also be stored as an Archive, a digital audio recording that can be read back into the SonicStation at a later time. An Archive includes all the Edit Lists and actual Sound Files along with special timing markers.

The *Project* defines what information will be stored in the Archive. A Project is a description of all the materials, Edit Lists and Sound Files, that were used in doing a given job. Projects are also useful documents for organizing the flow of work in a facility, since they contain all the information on the Project contents in a form that can be printed on a standard Macintosh printer.

The Structure of an Archive

The elements of a Project are stored on tape in a specific order. At the time the Archive is recorded, this organization is partially invisible to the user, but in restoring an Archive, this order defines the procedures used.

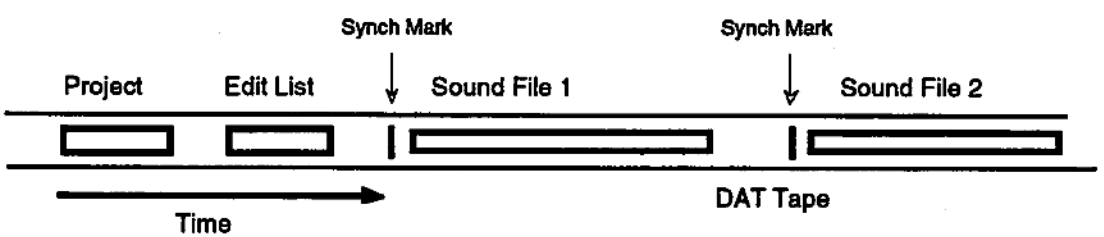

FIG. 13-1: Projects are archived onto tape in a specific order. This order affects the procedures used in restoring the Archive.

Starting from the list of components in the Archive Log, the SonicStation compiles all the information that describes the Project and stores this as the first element in the Archive. The Project consists of text information that has been formatted into digital audio. If listened to, it sounds like a low buzz of short duration.

In restoring an Archive, the Project is the first element that is loaded back into the system. Once the Project loads, the operator then stops the playback deck, rewinds back to the beginning of the Archive and then opens the restored Project from the **Archive Restore** dialog. The original Archive Log is opened, which is then used to restore the individual elements in the Log.

The next element in the Archive is the Edit List. Like the Project, the Edit List is a text document that is converted into a string of digital audio bits. The Edit List file may be longer or shorter, depending on the complexity of the List.

When an Edit List is restored, the SonicStation must process the digital information to put the document back into the exact form in which it is used. Once the Edit List is restored, the operator may need to stop the playback machine to allow the system time to do this processing.

After the Edit List come the source Sound Files. The Archive Log contains a complete list of all Sound Files used in the given Edit List, and these are stored onto the tape one after another. Each Sound File is preceded by a short click called a *Sync Mark*. The Sync Mark establishes the exact time relationships between all Sound Files, and the edits that are described by the Edit List.

Following the Sync Mark, the individual Sound File is recorded onto tape, and can be listened to while dumping or restoring the Archive.

The Steps in Dumping and Restoring an Archive

To archive a complete project on Digital Audio Tape:

- Choose **New Project** from the **New** command in the **File** menu to create a new Project.
- Enter the names of all Edit Lists in the Archive Log. Check the **Store All Sound Files** option to automatically store all Sound Files used in each List.
- Save the Project on the Macintosh hard disk.
- "Dump" the Archive onto digital tape.
- Check the Archive by restoring the Project.
- Label and store the Archive tape.

To restore a previously created Archive from tape:

- Select **Restore Archive** from the **File** menu.
- Load the Archive tape onto the playback machine.
- Restore the Project.
- Open the Project from the **Restore Archive** window.
- Rewind the Archive tape.
- Use the Restore Log to recover the individual Edit Lists and Sound Files that make up the Project.

I. Creating an Archive Tape

The first step in making an Archive is creating a new Project.

To create a new Project:

- **From the File menu's New item, select New Project...**

This brings up a dialog window to name the Project according to a 3-level hierarchy.

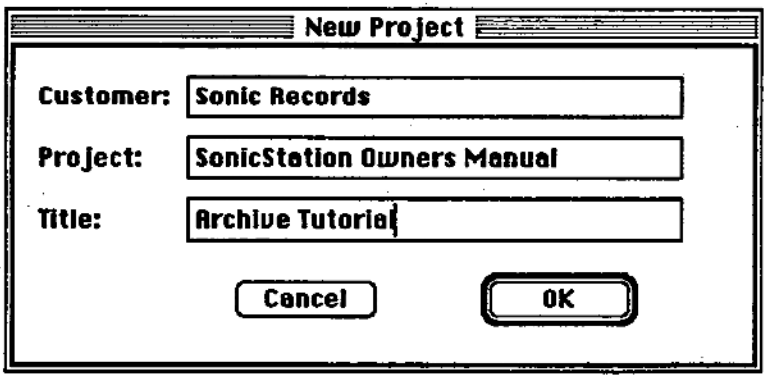

FIG. 13-2: A new Project is given a name with three levels. These become folders on the Macintosh hard disk.

There are no default names provided for Projects as there are for Sound Files. The user must enter a valid name into each field of the **New Project** dialog.

- **Enter names for the Customer, Project, and Title.**

(The Tab key may be used to move from one field to the next.)

- **Press Return or click OK in the New Project dialog.**

If the set of folders corresponding to the new Project name does not exist already, the system prompts the user to create these folders.

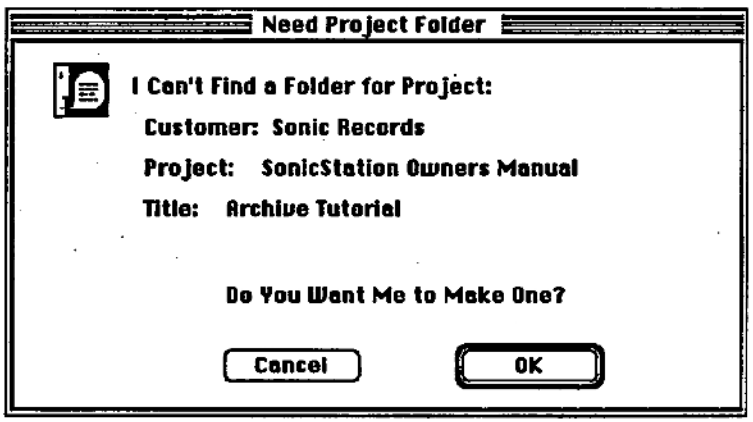

FIG. 13-3: When a new Project is created, the SonicStation creates a set of nested folders to hold the Project.

- **Click either button in the Need Project Folder dialog.**

If you select **OK**, the system creates a series of nested folders corresponding to the names entered. Note: the system does not automatically store the project and related materials in these folders.

If **Cancel** is selected, the system does not create a set of folders, but it still proceeds to open the Project.

After **Need Project Folder** closes, the **Project** window appears at the top of the screen, displaying the hierarchy of folders specified and the date on which the Project was created. An extra field (**WO**) lets the user enter a work order number for internal tracking.

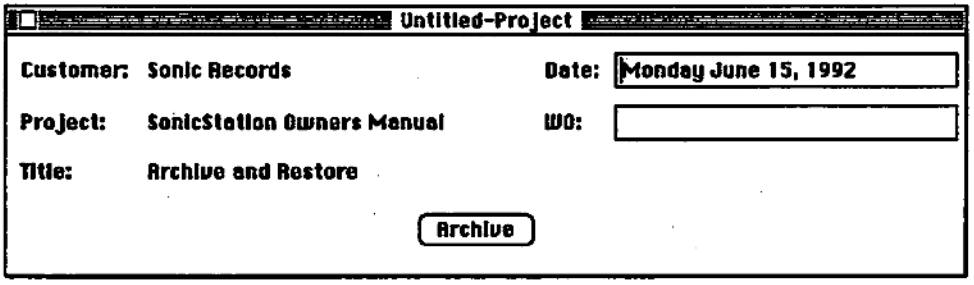

FIG. 13-4: The Project window displays the current information about the Project.

Preparing the Archive Log

Once the Project has been created, the user describes the media on which the Archive is to be stored and enters the names of Edit Lists to be stored in the Archive Log.

- **In the Project window, click the Archive button.**

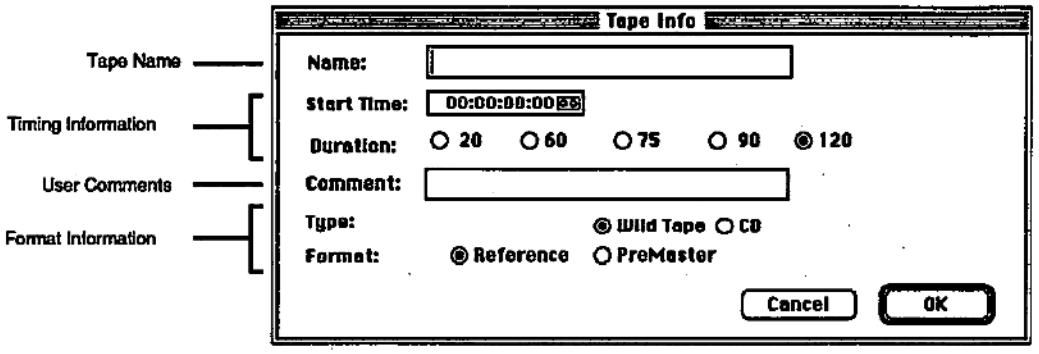

FIG. 13-5: The Tape Info dialog provides a space to enter the name of the tape, along with timing and format information.

This dialog lists information about the tape on which the Archive is stored. This information is restored with the Project when the Archive is loaded back into the system. It is also part of the formatted Project Log, and may be retained as a record.

There are several information fields in this dialog, some of which are only used with the machine-control features of the Expanded SonicStation.

The only item of the dialog that the user must attend to is the **Tape** name.

Tape Name - The tape name may be any combination of up to 32 characters or digits. If a valid name is not entered in this field, the system will give an error message and refuse to create the Archive Log

> Hint: Archive tapes should be labeled to correspond to the name entered in the **Tape Info** dialog.

Timing Information - The Expanded SonicStation uses the **Start Time** and **Duration** parameters to locate a specific Archive on a tape, and to avoid running off the end of the tape when dumping an Archive. Timing information may be useful for tracking purposes, especially if more than one Archive is stored on a tape.

Comments - The user can enter comment information that might be useful when the Archive is restored at a future time.

> IMPORTANT! If the name of the Macintosh "boot volume" (the name of the disk drive that holds the System Folder used in startup) is different from what it was at the time that the Archive is dumped, a restored Edit List will not open properly.
>
> This may occur if an Archive is restored on a system other than the one on which it was created, or if the name of the drive is changed in the normal course of time. If this occurs, all that is necessary is to rename the disk drive to match that of the system at the time that the Archive was created.
>
> Recording the name of the boot volume in the comments field, makes it easy to deal with this situation at any future time.

Format - There is only one setting of the format parameters, **Format** and **Type** that are valid for the SonicStation. All Sonic Station Archives must be dumped as **Wild Tape** and **Reference.** In the Expanded SonicStation the other selections can be used to dump and load Archives automatically, using the machine-control features.

Once the Tape name and any comments have been entered:

- **Click OK to close the Tape Info dialog.**

The **Archive Log** window then appears immediately beneath the **Project** window.

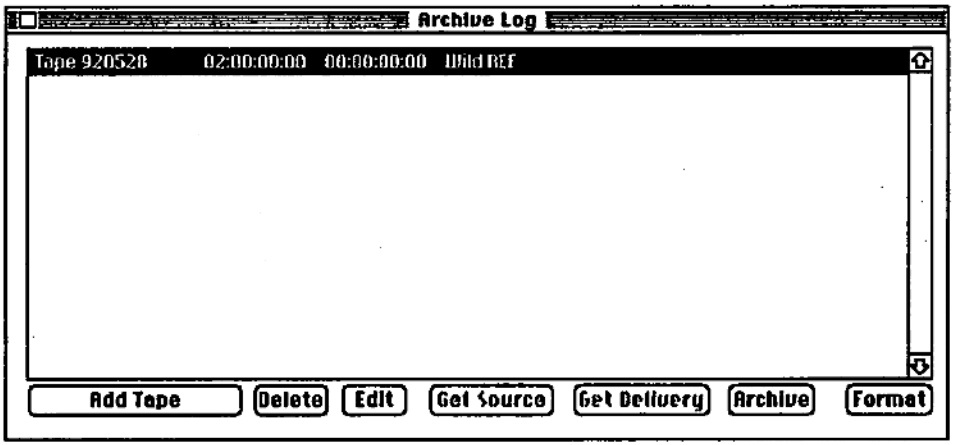

FIG. 13-6: The Archive Log window lists all elements stored on an Archive Tape.

When the window first opens, the tape is the only item listed. The items to be archived are entered into this window, forming a hierarchy.

> Note: In the **Archive Log** window, it is not necessarily obvious how the user is to open the "Tape" so that the names of the individual Edit List or Lists can be entered.Archive Log
>
> The secret is to double-click the line in the Log window where the name of the Tape is shown.

<u>To enter the names of Edit Lists to be included in the Archive:</u>

- **Double-click the name of the tape, as displayed at the top of the main field.**

The **Add Tape** button changes its name to read "**Add EDL/Sound.**"

- **Click the Add EDL/Sound button.**

This brings up a dialog to select an Edit List (EDL) or Sound File.

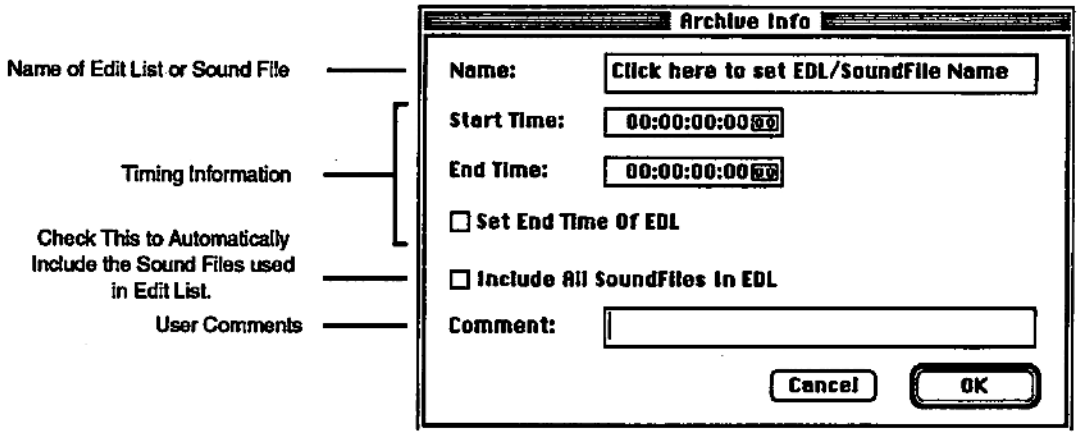

FIG. 13-7: The Archive Info dialog is used to enter the names of Edit Lists and Sound Files to the saved.

The key items in this dialog are the **Name** field and the **Include All SoundFiles in EDL** check box. The Timing Information fields are not used in the basic SonicStation. The Comment field is available for information that the user would like to add for future reference.

- **Click the Name field of the Archive Info window.**

This brings up a standard Macintosh File Select dialog.

- **Use the Macintosh File Selector to locate and select the Edit List to be saved in the Archive.**

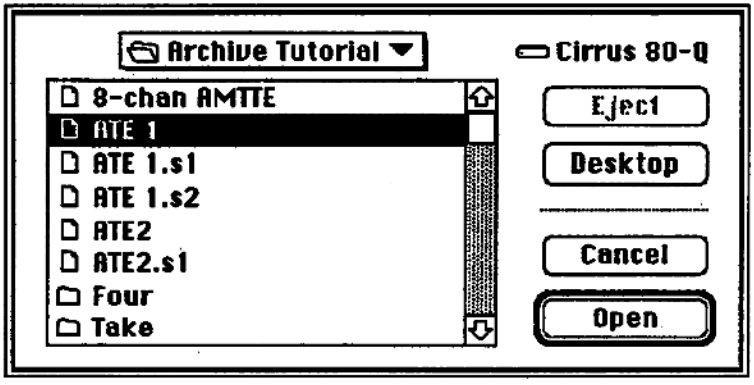

FIG. 13-8: A standard Macintosh File Select dialog is used to locate and select the Edit List or Sound File desired.

- **Click the Open button in the File Selector dialog, or press Return to enter the selected file in the Name field of Archive Log.**

- **In the Archive Log dialog, check the box for Include All SoundFiles in EDL.**

With **Include All Sound Files** selected, the system automatically scans the Edit List and adds the names of all Sound Files used into the Archive Log. These otherwise must be entered manually, with the attendant risk that a needed Sound File might be inadvertently omitted.

> **Include All Sound Files** should not be checked if the Archive includes multiple Edit Lists that use some or all of the same Sound Files, or when the total length of the Sound Files in an Edit List exceeds the time available on a single Archive tape. In these instances, the names of the individual Sound Files can be entered in the Log in the same way that Edit Lists are added.

- Click OK or press Return to close the Archive Log window.

When an entry is made into the Archive Log, the system prompts the user to check that the total length of the Archive does not exceed the length of the tape.

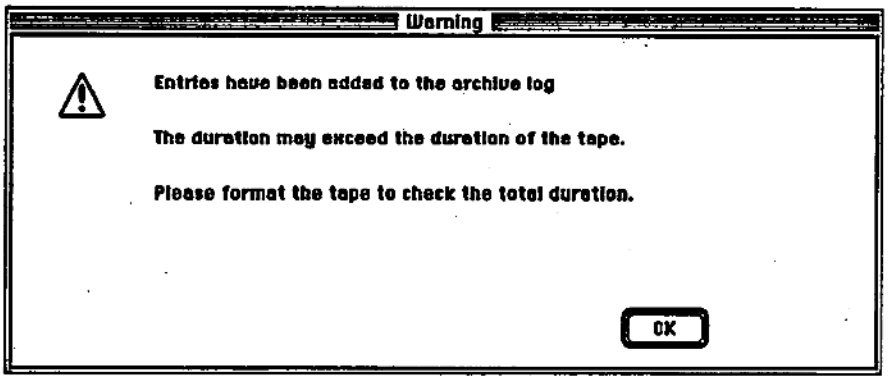

FIG. 13-9: This warning appears each time that a new entry is made to the Archive Log.

- Click OK in the Warning dialog, or press Return to close the dialog.

The display returns to the **Archive Log** window, showing the new entries for the Edit List and the names of all Sound Files used.

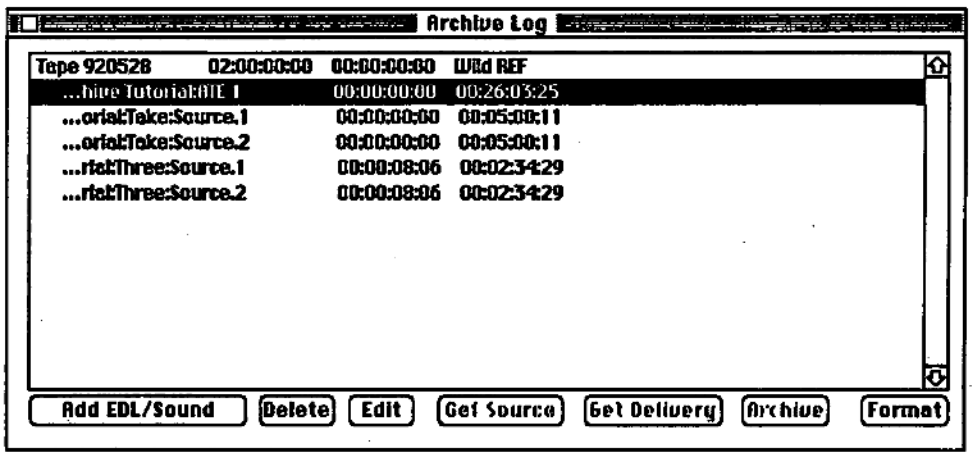

FIG. 13-10: The names of Edit Lists and Sound Files are added to the Archive Log, beneath the name of the tape.Archive Log

The item immediately below the Tape is the Edit List. The names of included Sound Files are listed underneath.

Various times are listed with the file names. The numbers furthest to the right of each entry are the lengths of the items named. Note that the length given for the Edit List is its total playing time. The data representing the Edit List on the Archive tape is much shorter. Sound Files are stored in their entirety, so the lengths given are accurate.

If desired, multiple Edit Lists may be stored in a single Archive.

- **Add other Edit Lists until all items to be included in the Archive are present.**

The **Delete** and **Edit** buttons can be used to remove items or alter information already entered. Once the list of materials for Archiving is complete, the Archive may be dumped to tape.

Checking the Length of the Archive

Before committing the Archive to tape, it is a very good idea to verify that the Archive is not longer than the tape on which it is to be stored. The reliable way to check the total length of the Archive is to *format* the Archive Log.

To format the Archive Log:

- **Click the Format button in the Archive Log window.**

The entire Archive is formatted into a document that may be printed directly from the screen, or saved as a Text document.

```
Archive Log:

NOTE: Durations represent duration of file on the archive tape.
      Start and end times represent start and end on the archive tape.
Total Duration includes all archive information stored on tape.
```

NAME	TITLE	START hh:mm:ss:ff	END hh:mm:ss:ff	DURATION hh:mm:ss:ff	COMMENT
1.	...e Tutorial:ATE 1	00:00:00:00	00:00:49:06	00:00:49:07	
2.	...al:Take:Source.1	00:00:49:07	00:06:36:13	00:05:47:07	
3.	...al:Take:Source.2	00:00:49:07	00:06:36:13	00:05:47:07	
4.	...l:Three:Source.1	00:06:36:14	00:09:58:08	00:03:21:25	
5.	...l:Three:Source.2	00:06:36:14	00:09:58:08	00:03:21:25	
Total Duration of Archive Tape:				00:09:58:09	

FIG. 13-21: The formatted Archive Log shows the start and stop times of each element in the Archive, as well as the total length.

The figure at the lower right of the formatted Log is the exact length of the Archive that will be stored on tape. After verifying the length, the formatted Log window can be closed to return to the main **Archive Log** window.

Dumping the Archive to Tape

Before initiating the Archive, make sure that the SonicStation's audio output is connected to DAT or other digital media by direct digital link. Analog recorders, or recordings made by converting the SonicStation output to analog and back cannot be used for Archiving.

To record the Archive onto tape:

- **Select the name of the Tape at the top of the Archive Log by clicking it.**
- **Click the button labeled Archive.**

The system takes some amount of time to prepare the Archive, depending on the number and complexity of items in the Log. The major task performed during this time is converting the Edit Lists into audio files that can be transferred out the SonicStation's audio ports.

Once the process of preparing the Archive is complete, the system prompts the user to make sure that the tape on which the Archive will be recorded is loaded on the target machine.

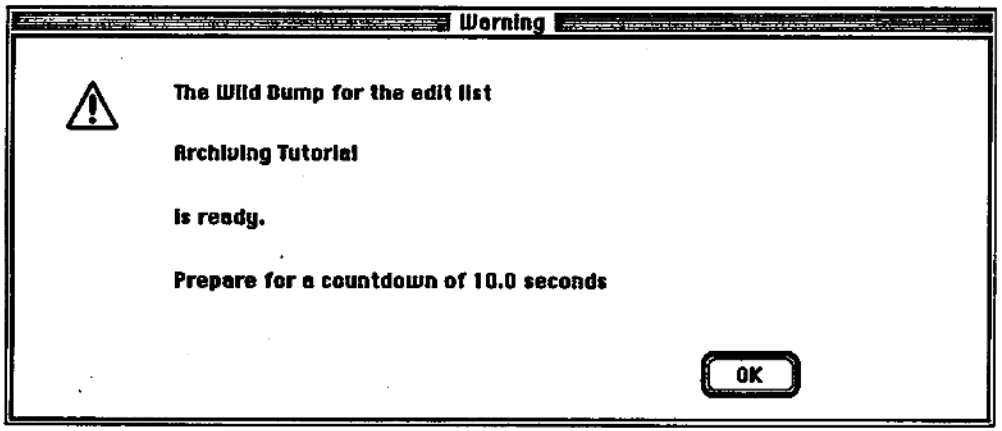

FIG. 13-11: Once the Archive has been prepared, the user is prompted to get ready for the actual recording.

- **Mount the tape on the record machine and arm it for recording.**
- **Press Return or click OK to close the alert dialog.**
- **Put the target tape machine into record.**

There is a 10-second pause before the Archive begins to dump, when the target machine <u>must</u> be in record and rolling.

A small window appears to show the progress of the Archive. The Archive may be stopped at any time.

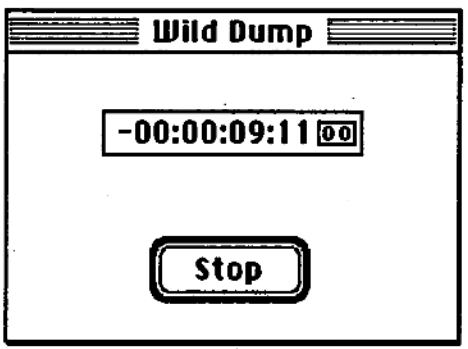

FIG. 13-12: The Wild Dump window shows the time until the start of the Archive, followed by the time elapsed.

The first portion of the Archive contains the data of the Project itself, followed by the Edit List. If the Archive output is monitored as audio, these portions will be heard as a series of low buzzes interspersed by fairly loud clicks. The clicks are the Sync Marks, while the buzzes carry the actual data.

After the Edit List has been dumped, the included Sound Files are archived. These are recorded as audio, but with a Sync Mark before the beginning of each file. These marks are critical, as they provide the reference to the absolute time in each Sound File. Without these, the system is unable to reconstruct the Edit List accurately.

The total length of the Archive is the length of all the Sound Files, plus the Project and Edit List(s). The amount of time taken to dump an Archive could range as high as the full amount of audio storage on-line.

While the Archive is being dumped, the SonicStation can be used for other purposes. An Edit List may be opened and editing performed. However, there is no audio playback from an Edit List during archiving, and the Mixing Desk cannot be used.

New Sound Files may be recorded while an Archive is in progress, if sufficient space is available on the Sound Disks. With two decks, it is even possible to restore one Archive while another is being recorded.

Once the complete Archive has been dumped, the system prompts the user to stop the tape.

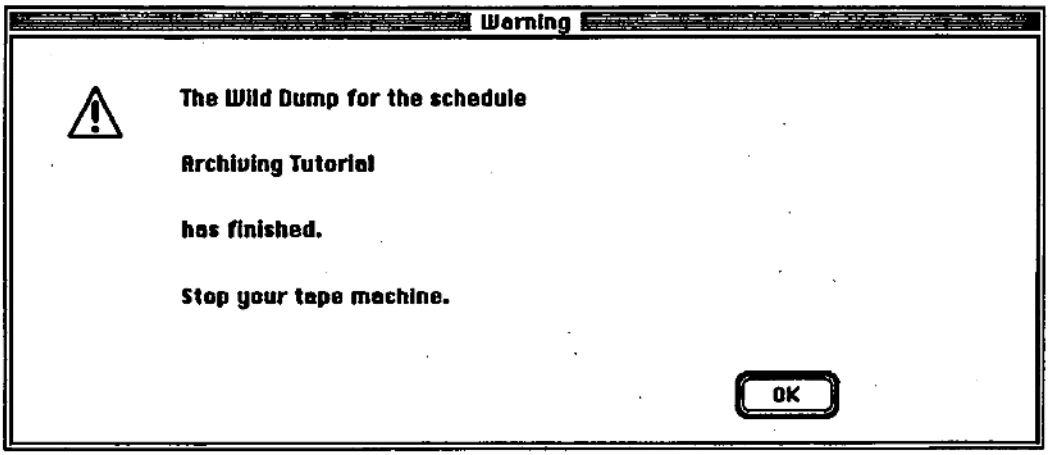

FIG. 13-13: After the Archive is complete the user receives a prompt to stop the recording machine.

This completes the process of generating the Archive tape.

- **Stop the tape machine. Remove the Archive tape, make sure it is labeled properly, and place it in storage.**

The Archive is complete.

Checking the Archive

An Archive is an important document. Once it has been dumped, the user will want to know that the Archive can be reliably restored in the future. It is prudent to check the integrity of the tape before it is put into storage.

The easiest way to verify that the Archive was recorded properly is to rename (or delete) the Project that was archived from the Macintosh hard disk, then restore the Project file *only* from the Archive tape, following the procedures described in the next section of this chapter.

If the Project file restores successfully, it verifies that transfer of data was successful. While this does not protect against problems later in the tape, faults in mid-stream are rare. The only common error of this type is inadvertently dumping an Archive that is too long for the tape available.

Restoring the Project thus provides a good check of the Archive tape. Note that the only way to be absolutely positive that the entire Archive is good is to restore it in its entirety. This is a time-consuming procedure, and not generally necessary.

Once the Archive has been checked, the Edit Lists and Sound Files may be deleted from the disks without fear. At any future time, the Archive can be restored, providing an exact copy of the material with all edits intact.

II. Restoring an Archive from Tape

Restoring an Archive would seem to be a simple matter of starting the restore process from the SonicStation screen and playing the entire set of files from the tape into the system at once. However, owing to the way that Archives are structured, there are a few steps in the process.

> Note: SonicStation Archives are a reliable means of saving editing work for the future. It is important, however, to follow every step in the restoration procedure *exactly* to restore the Archive successfully.
>
> We suggest the SonicStation user create a few short Archives and practice restoring them before attempting restoration of a critical project.

One potential problem in restoring an Archive comes if the files are still resident on the disk when the Archive is restored. Then the restoration does not seem to complete, when in actuality the Archive is fully restored (never having been absent from the disk to begin with).

To restore an Archive from tape:

- **Verify that the SonicStation's digital audio inputs are active. If need be, go to Audio I/O Preferences to turn the inputs on.**
- **Select Background Manager from the Managers command in the File menu.**

The **Background Manager** window provides important information during restoration.

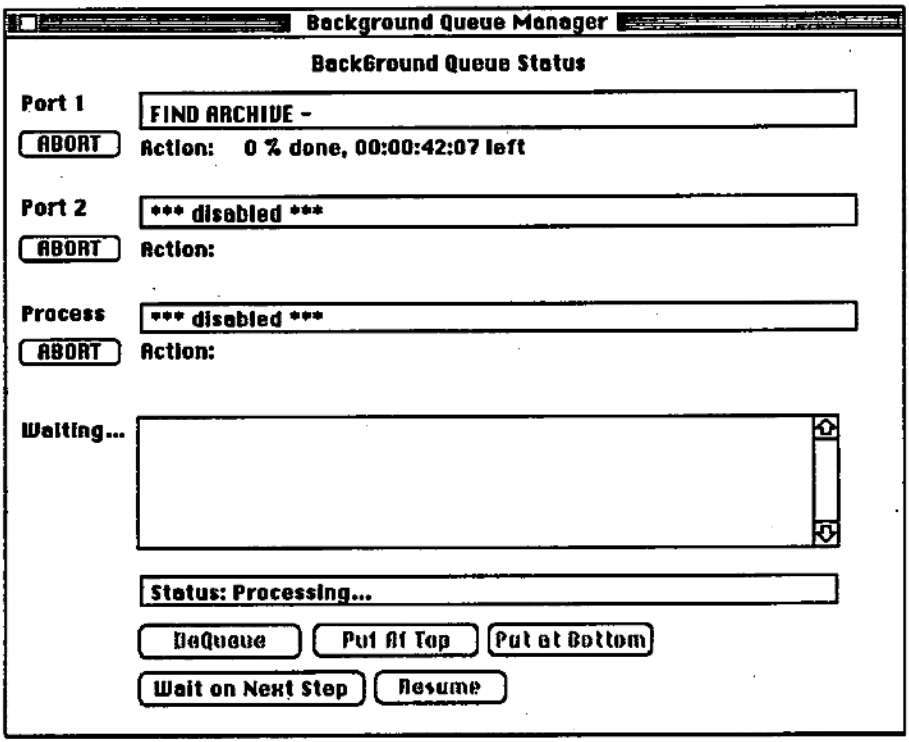

FIG. 13-14: The Background Manager keeps track of restoring the archive. By watching its display, the operator can monitor the process.

The topmost portion of the window, where it says "Port 1" is the key part used in restoring an Archive.

Restoring the Project

Now it's time to start the restore.

- **Load the Archive tape onto the playback deck.**
- **Locate the tape to a point just before the beginning of the Archive.**
- **Choose Restore Archive from the File menu.**

The **Restore Archive** dialog appears. Note the three buttons along the bottom of the dialog box.

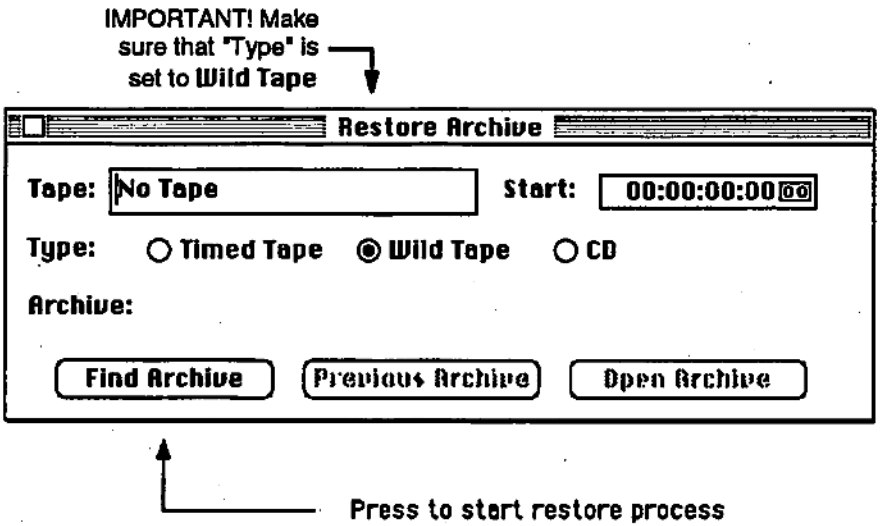

FIG. 13-15: The Restore Archive dialog initiates and controls restoration.

The Archive **Type** <u>must</u> be set to **Wild Tape**. The other options are not available with the basic SonicStation.

- Make sure that the **Wild Tape** option is selected for **Type** in the **Restore Archive** dialog.

This is important, the restoration will fail in annoying ways if the wrong option is selected.

Initially, the **Restore Archive** window may appear so as to obscure the view of the **Background Manager's** upper field. If so, simply move the dialog box with the mouse. You need to be able to see the topmost field while restoring.

- Verify once more that the Archive tape is cued to a point shortly before the beginning of the Archive.

- Click the **Find Archive** button in **Restore Archive**.

The system then prompts the user to make sure that the correct Archive tape is mounted and cued.

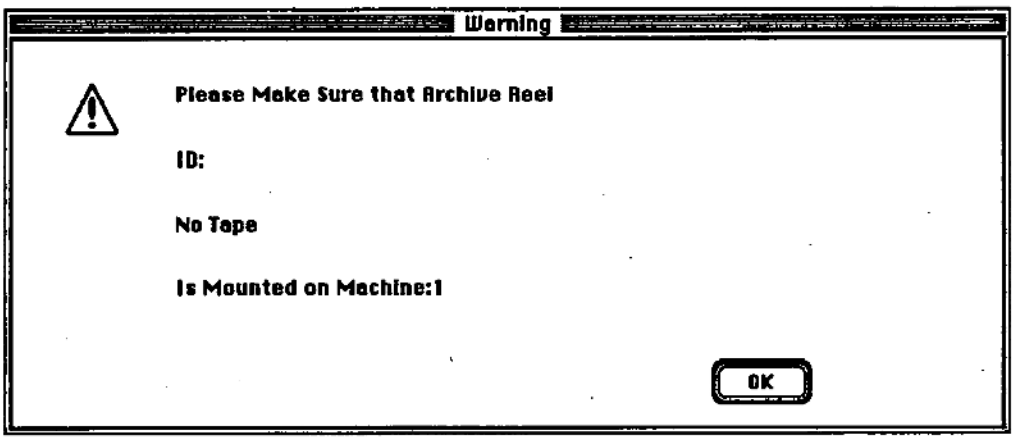

FIG. 13-16: The user is prompted to ensure that the Archive is mounted properly on the tape machine.

After clicking **OK** to close the Warning window, the system will put up a message that says "**Allocating restoration support files.**" This message will stay in view for a few seconds, after which the system advises the operator to start the Archive tape.

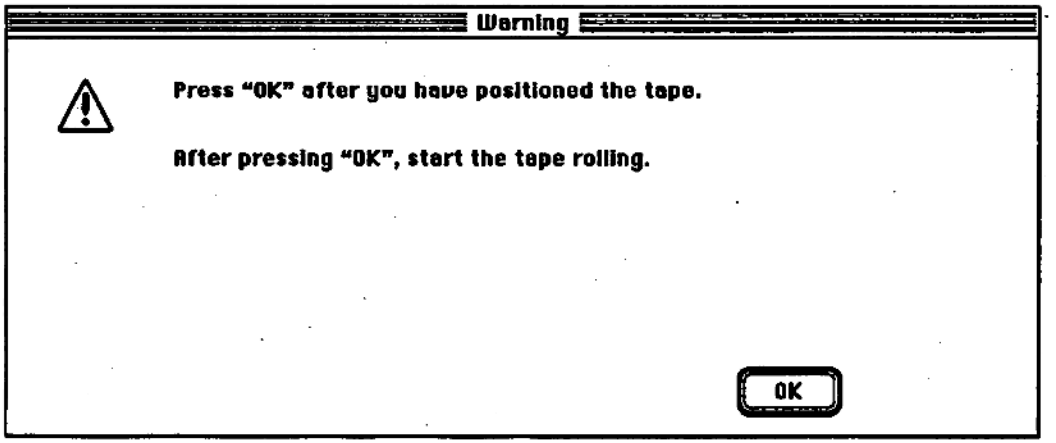

FIG. 13-17: After allocating the restoration support files, the system prompts the user to start the tape.

Once this window is closed by the user's response, the actual restoration begins.

- **Click OK to close the Warning window.**
- **Start the Archive tape playing back.**

As the tape rolls, observe the legends under the **Background Manager's** uppermost field. It might be desirable also to monitor the audio output of the Archive deck to coordinate the elements of the Archive.

BackGround Queue Status

Port 1 | FIND ARCHIVE -

ABORT | Action: 0 % done, 00:00:42:07 left

Before the beginning of the Archive is found, the **Background Queue Status** display reads "**0% done,**" and the time figures increment second by second

When the first starting marker of the Archive is read from the Tape, the display changes to read:

Action: SSP rolling

Then the 0% display returns and the time figure jumps to a new value and starts to go *down*, decrementing toward zero. As the time approaches zero, the "% done" figure starts to go up.

- **When the "% done" figure reaches zero, stop the tape and rewind it back to the cue position before the beginning of the Archive.**

This is one of the most important steps in restoring the Archive. The procedure so far restores the Project itself, along with the Archive Log. The next step is to open the Archive Log as a Restore Log and use it to control the sequence of restoring the original elements of the Project.

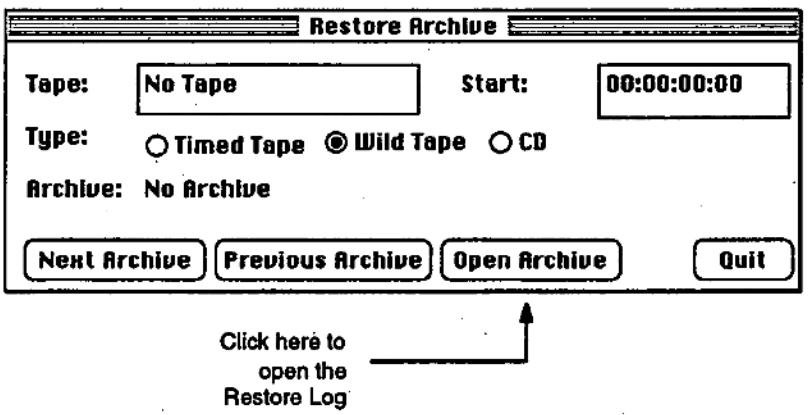

FIG. 13-18: The restored Project is opened from the Restore Archive window.

The **Open Archive** button in the **Restore Archive** dialog is now active.

- **Click the Open Archive button in Restore Archive.**

The **Project** window now opens, looking almost (but not quite) identical to the way it appeared when the Archive was created.

Restoring the Edit List and Sound Files

The upper line of the **Restore Log** shows the name of the Tape. The names of the Edit Lists and Sound Files to be restored can be seen by double-clicking the Tape name.

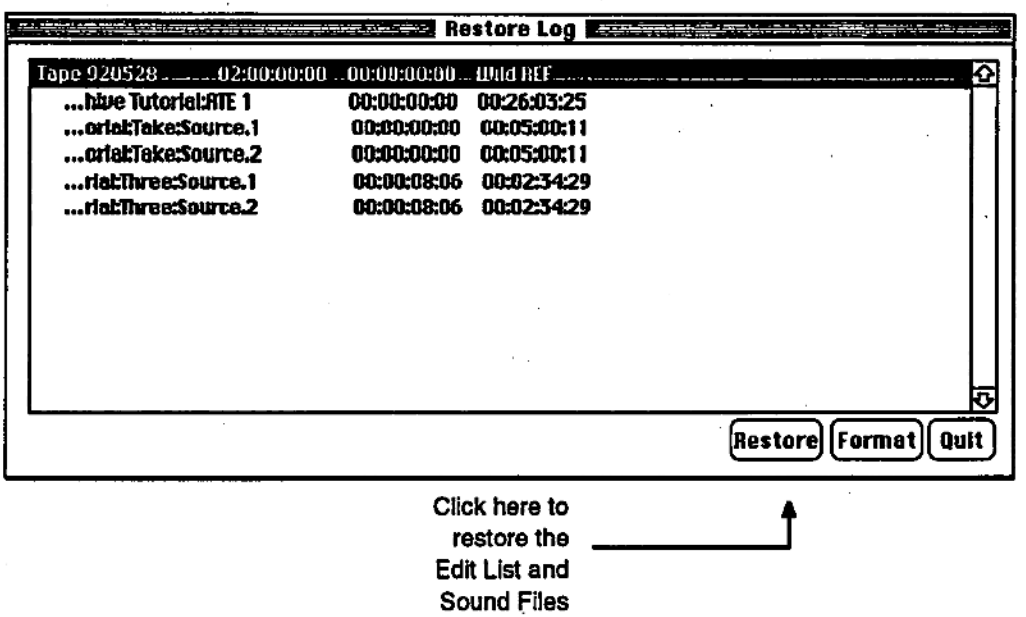

FIG. 13-19: The Restore Log is used to initiate restoration of the Edit List and Sound Files.

- **Select the Tape name in the Restore Log if it is not already selected.**
- **Verify that the Archive tape has been cued back to a point before the first mark in the Archive.**
- **Click the Restore button in the Restore Log window.**

Once again, the system prompts the user to make sure the correct tape is loaded. It then allocates the restoration support files, and prompts the user to start the tape.

- **Close the last prompt dialog and start the Archive tape from the beginning.**
- **Select Background Manager from the Managers command in the File menu.**

This last step brings the **Background Manager** window back into view. As the tape rolls, the window behaves almost as before, except that it ignores the Project and reads in the Edit List file immediately following.

The system then processes the Edit List file and loads each Sound File in turn. The **Background Manager** displays the sequence of finding and restoring each Sound File in turn. When the last Sound File is read in, the Archive process is complete.

One pitfall of restoration can occur if the Edit List is very complex. In that case, the system might still be processing the information in the Edit List when the first Sound File begins on the tape. In that case, an error message appears, warning that the "Sync mark has been missed."

If this message appears, stop the tape immediately and rewind to a point just before the click of the Sync Mark for that Sound File. Observe the "**% done**" figure in the **Background Manager** display, and don't restart the tape until the figure reaches 100%.

The user can close the **Background Manager** window and click the **Quit** button to close the **Project** window.

Opening the Restored Edit List

After the restore, the Edit List and its Sound Files are found in a set of folders in the **SND** folder, corresponding to the names assigned when the Project was created. The Edit List can be opened like any other.

If the Edit List opens with no sound in the panels, it is an indication that the name of the Macintosh boot volume is different from what it was when the Archive was created. If the name of the boot volume was recorded when the Archive was made (for example, in the **Comment** field of the **Tape Info**, as suggested) the current drive can simply be renamed according to the older name. The Edit List will then open normally.

If the previous name of the boot volume is not immediately available, there is still a way to retrieve it from the Edit List itself, using a standard word processor program. Most such programs, such as *Microsoft Word Version 5*, are able to open any type of file. By opening the Edit List into the word processor, it is possible to view the names of the Sound Files by their full path name, including the name of the original boot volume.

```
TIME = 1510.816330 SECONDS */
/*MINTIME = 210.000000 SECONDS */
/*SCHEDULEMAXTIME = 1510.816330 SECONDS */
/*SCHEDULEMINTIME = 0.000000 SECONDS */
/*NCHANS = 12 */
/*These lines are used by logs for quick access */
/*END */
samplingRate = 44100.000000;
numberOfBits = 16;
preemphasis = 0;

play(    soundFileNumber = "Choujin-kai:SND:Recordings:Take0100:SOURCE.1",
         inputChannelNumber = 0,
```

The name of the original boot volume when the Edit List was created

FIG. 13-20: The name of an Edit List's original "boot volume" can be read by opening the List with a word processing program.

It then becomes a simple matter to change the name of the current boot volume to match that of the system when the Edit List was created. The user may also find it of interest to browse in the Edit List file to see how the SonicStation stores the editing information.

Sampling rate is another potential pitfall. The restored Edit List was created at a certain sampling rate, but the system cannot automatically switch its clock to fit. It is up to the user to make sure that the system is clocking at the same rate as when it was created.

Summary

Complete Projects, consisting of one or more Edit Lists and the Sound Files that are used in them, can be stored as an Archive on digital audio tape.

Archives are created by listing the elements to be included in an Archive Log. The SonicStation then automatically formats these for transfer to tape.

The Archive can be restored at any future time. The procedure for restoring an Archive is reliable, but exacting. Each step must be followed precisely to guarantee successful restoration.

The Archive Log also can be used to provide a printed record on the Project.

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To take Picture ⇧ SHIFT + ⌘ CONTROL + 3

Fosdex Switch

A Down	B Down	C Down
2 4 6	1 3	2 6

Setting E0-01

ADI PRISM

Analogue Input Down	Digital Input Down
2 6	123 56 7/8